This is a digital copy of a book that was preserved for generations on library shelves before it was carefully scanned by Google as part of a project to make the world's books discoverable online.

It has survived long enough for the copyright to expire and the book to enter the public domain. A public domain book is one that was never subject to copyright or whose legal copyright term has expired. Whether a book is in the public domain may vary country to country. Public domain books are our gateways to the past, representing a wealth of history, culture and knowledge that's often difficult to discover.

Marks, notations and other marginalia present in the original volume will appear in this file - a reminder of this book's long journey from the publisher to a library and finally to you.

Usage guidelines

Google is proud to partner with libraries to digitize public domain materials and make them widely accessible. Public domain books belong to the public and we are merely their custodians. Nevertheless, this work is expensive, so in order to keep providing this resource, we have taken steps to prevent abuse by commercial parties, including placing technical restrictions on automated querying.

We also ask that you:

+ *Make non-commercial use of the files* We designed Google Book Search for use by individuals, and we request that you use these files for personal, non-commercial purposes.

+ *Refrain from automated querying* Do not send automated queries of any sort to Google's system: If you are conducting research on machine translation, optical character recognition or other areas where access to a large amount of text is helpful, please contact us. We encourage the use of public domain materials for these purposes and may be able to help.

+ *Maintain attribution* The Google "watermark" you see on each file is essential for informing people about this project and helping them find additional materials through Google Book Search. Please do not remove it.

+ *Keep it legal* Whatever your use, remember that you are responsible for ensuring that what you are doing is legal. Do not assume that just because we believe a book is in the public domain for users in the United States, that the work is also in the public domain for users in other countries. Whether a book is still in copyright varies from country to country, and we can't offer guidance on whether any specific use of any specific book is allowed. Please do not assume that a book's appearance in Google Book Search means it can be used in any manner anywhere in the world. Copyright infringement liability can be quite severe.

About Google Book Search

Google's mission is to organize the world's information and to make it universally accessible and useful. Google Book Search helps readers discover the world's books while helping authors and publishers reach new audiences. You can search through the full text of this book on the web at `http://books.google.com/`

N 36
Tralle
=

Harvard Divinity School

ANDOVER-HARVARD THEOLOGICAL LIBRARY
MDCCCCX
CAMBRIDGE, MASSACHUSETTS

FROM THE BEQUEST OF
MRS. LOUISA J. HALL
Widow of Edward Brooks Hall, D.D.,
Divinity School, Class of 1824

JUDSON TRAINING MANUALS

FOR THE SCHOOL OF THE CHURCH

EDITED BY

W. EDWARD RAFFETY, Ph. D.
HENRY EDWARD TRALLE, Th. D.
WILLIAM E. CHALMERS, D. D.

[Church architecture [illegible]]

PLANNING CHURCH BUILDINGS

By

HENRY EDWARD TRALLE, M. A., Th. D.

Author of
"Story-Telling Lessons," "Sunday School Experience,"
"Teacher-Training Essentials," etc.

STANDARDS

CHECK LIST FOR COMMITTEES AND ARCHITECTS

By **GEORGE EARNEST MERRILL, A. I. A.**

PHILADELPHIA
THE JUDSON PRESS
BOSTON CHICAGO ST. LOUIS LOS ANGELES
KANSAS CITY SEATTLE TORONTO

c

ANDOVER-HARVARD
THEOLOGICAL LIBRARY
CAMBRIDGE, MASS.
H 48,245

COPYRIGHT, 1921, BY
GILBERT N. BRINK, SECRETARY

DEDICATED
TO
E. G. TRIMBLE
IN GRATEFUL RECOGNITION OF MATERIAL
ASSISTANCE IN THE AUTHOR'S
EXPERIMENTS AND INVESTIGATIONS
IN RELIGIOUS EDUCATION

EDITORS' FOREWORD

THIS volume is one in a series of texts in religious education known as the *Judson Training Manuals for the School of the Church.*

These manuals are arranged in three groups, namely, general, departmental, and parent-training. The *general* group includes vital teaching, story-telling, educational evangelism, expression through worship, handwork, community service, appreciation of the Bible, educational leadership, and kindred worth-while themes in the field of religious education. The *departmental* group covers courses for every department of the school of the church—Cradle Roll, Beginners', Primary, Junior, etc. The *parent-training* manuals emphasize religion in the home and the necessity of training for the God-given, heaven-blessed privilege of parenthood.

It is the aim of these manuals to popularize the assured results of the best psychology and pedagogy and to make them the willing and efficient servants of all workers in the school of the church.

Both the editors and the writers want these books "to live where the people live" and to be of real value to those forward-looking folk destined to be the leaders in religious education.

To this end, each course will be (1) simple in language, (2) accurate in statement, (3) sound in psychology, (4) vital in pedagogy, (5) concrete in treatment, (6) practical in purpose, and (7) spiritual in tone.

Editors' Foreword

Dr. H. E. Tralle, the author of this manual, " Planning Church Buildings," is a pioneer among educators in his advocacy of the elimination of all movable partitions in the church-building and the complete separation of department from departments and of class from classes.

Doctor Tralle's discovery and demonstration of the truth that it is possible to have individual classrooms for a given department, as well as an assembly-room, with the same floor-space and at practically the same cost, constitutes a real contribution toward the solution of the building problem of the church.

Since 1906, he has been advocating this truth in his classes in college, training-school, institutes, assemblies, conventions, and in his writings. As early as 1908, he helped a church to build an addition with complete assembly-rooms and individual classrooms, for the Junior and the Intermediate departments.

During these twelve years, he has been able to assist church committees, pastors, and architects to work out this complete-separation idea in whole or in part in many buildings, in various sections of the country. He has satisfied himself and others of the value and the practicability of the idea by repeated tests, measurements, and observations, until he can advocate it with conviction and confidence.

This is certainly a manual with a mission, and a much needed one. Pastors, superintendents, and church building committees will give it a warm welcome. It offers help in a direct, practical way. Its wide use will usher in a new day of the church's opportunity to do effective educational work.

W. Edward Raffety.

AUTHOR'S FOREWORD

THE writer has sought to put himself beyond any suspicion of advertising architects or local churches, being concerned only to set forth some workable ideals.

He deems it necessary, however, to make mention of several organizations and individuals. The Bureau of Architecture of the Methodist Episcopal Church is worthy of special commendation. It came into existence in 1915, and has exerted no small influence in Methodist circles. Elmo C. Lowe is consulting architect with Frank G. Dillard as architect in charge at the Chicago headquarters and A. N. Dobbins at the Philadelphia office.

In 1920, the Baptists, under the direction of The American Baptist Home Mission Society and the American Baptist Publication Society, established a Department of Architecture, with George E. Merrill as the Architect-Secretary in charge. Mr. Merrill is responsible for the Standards in this book, and for many of the illustrative plans. The author cordially acknowledges deep indebtedness to him for his sympathetic and competent cooperation. A word of thanks also is due Mr. Joseph Hudnut, of New York, a member of the American Institute of Architects and a university lecturer on architecture. He is the author of Chapter X, " The Architect as Artist."

For several years, the Southern Baptists have been giving serious attention to the problems of church-building, through their Sunday School Board and Dr. P. E. Burroughs. Only recently, the Presbyterians have established a bureau of architecture, and the other denominations no doubt will take up the task of educating and assisting churches in their building problems.

The first architect in the country to accept from the author this complete-separation plan, for both the departments and the classes, and to work it out in actual construction, was Mr. J. H. Felt, of Kansas City, Missouri, and to him the author must express his appreciation for encouragement and practical assistance in getting the idea "to take root."

A word of appreciation is due also to Professor Walter S. Athearn and his associates for his "Malden Survey," which indicates one way of bringing about a community realization of church-building needs.

H. E. TRALLE.

CONTENTS

CHAPTER PAGE

I. How to Proceed 1

II. Building for Teaching 11

III. Departmental Requirements 21

IV. Auditorium and Other Rooms 34

V. Size of Building 41

VI. Planning for 400 to 700 Capacity 50

VII. Planning for 300 Capacity 57

VIII. Planning for 100 to 200 Capacity......... 64

IX. Planning for 800 to 1,200 Capacity 70

X. The Architect as Artist 77

Standards 89

CHAPTER I

HOW TO PROCEED

If there could be written a detailed account of the procedure of churches in their building enterprises, it has been said, the record would read like "the eccentric doings of the inmates of a mad-house," with occasional indications of lucidity. We should seek to increase the length and frequency of the "lucid intervals."

CREATING A COMMITTEE

No building committee ever should consist of an "official board." The committee should be representative of *all* the boards and organizations within the church. *Selection should be made on the basis of interest and intelligence,* and not on the basis of age, wealth, or official position merely.

At least half the committee should consist of the younger, more progressive members of the church. Aside from the fact that such selection will insure a better structure, more adequate to the demands of changed conditions, it is only fair that those for whom the building is being constructed chiefly, namely, the younger members, shall have an effective voice in determining its character. Soon the older members will be gone to the "mansion in the skies," and it will be the younger members who will be occupying and using this earthly building.

Practically half the committee should be women. If there is ever a time when the church needs to avail itself to the fullest extent of the interest and loyalty and intelligence of its women, a building-time is that time.

In the constitution of the committee *every interest in the church should have adequate representation.* This will mean, for instance, that the Sunday school, or school of the church, will be represented by its superintendent, or director of religious education, by its departmental superintendents, by certain selected teachers, and by representatives of both sexes of the young people's and adult classes.

Within the large committee, there will be constituted various smaller sub-committees, such as committee on plans, committee on finance, committee on advertising, committee on architect, etc. From the committee on architect there will be designated *one member to represent the committee in all its dealings with the architect.* If this is not done, and the architect is compelled to deal with more than one individual, there will result more or less of confusion, misunderstanding, and loss of time and money.

A word of caution needs to be uttered, just here, in connection with the organization and work of the building committee. *Beware of the boss on the building committee.* The writer knew a wealthy, strong-willed man who bulldozed the building committee into the erection of a structure-blunder that " looked like " what he wanted to see and that would seriously handicap his church for the next twenty years. It would have been far better for the church to have done without this man's money than to have taken it and what they got with it. Every once in a while, some domineering pastor, who thinks he knows how to build because he knows how to preach, will force the church to build the wrong type of structure, and then will move on, leaving the building-blunder bag for somebody else to hold.

In the handling of building funds, of course, the greatest care should be exercised, with the enforcement of the strictest business methods. There should be itemized reports with the authoritative auditing of accounts. No one interested in the building enterprise can afford to allow himself to be placed in a position where he might be open to suspicion.

DEVELOPING A PLAN

Before building a house, it is necessary to build a plan, and this plan must be built around the needs of the church. Consider the present actual needs in connection with the probable future needs, and plan accordingly.

In other words, a plan must be developed that will house the program. What is the program of the church? What is it here for? What is it trying to do? What is its function?

The great objective of the church is to "save souls" and to develop intelligent, useful, socialized Christian life. And it seeks to attain its objective through a threefold program, namely, (1) a program of *teaching,* including instruction, worship, and expressional activities; (2) a program of *recreation,* including play, entertainment, and association; (3) a program of *service,* including giving, doing, and approving.

The first consideration, then, in developing a plan, is not, "How will the building look?" It can be made to look right, if it *is* right. The first consideration should be, "*Will this building properly house the program of the church, and enable it to function adequately in the community and in the world?*" Get such a building, properly unified and related in all its parts, and it can be made beautiful and impressive in appearance.

Nor should the cost of the building have first consideration. It is a serious mistake to say, "We have so much money, and we are going to 'cut the garment according to the cloth.'" Christian statesmanship will demand that the needs of the church be the chief consideration in the developing of building plans. A building thus planned actually *costs less,* as a matter of fact, than one that is planned without regard to a *church program.*

It is a mistake to burden a church with a heavy building debt, but it is just as great a mistake to build without faith in the future of the church and in the people of the community, and without recognition of an adequate church program.

An adequate program, a clear vision, and a strong faith constitute a *powerful combination in appealing to the imagination and generosity of a community and to the favor and cooperation of God.*

It is a fact that a worth-while church building, properly planned and constructed, will prove to be a *good financial investment* for any church, in its power to attract intelligence and resources.

Sometimes it is wise, of course, to move cautiously, and to build one unit at a time, beginning usually with an educational unit, *but always the whole plan should be in mind from the beginning,* and should be the determining factor in all procedure.

CONSULTING THE SPECIALISTS

The first step for a church to take, after the creation of a building committee, is to seek, through this committee, expert assistance in developing its program and plan. *It is simple folly for the committee to assume that it is sufficient unto itself and to fail to avail itself of the idealism and technical skill of the educational and architectural specialists.*

There are now *denominational departments of architecture* which exist for the sole purpose of making available to each local church, whether large or small, the composite experience of many representative educators, architects, and builders.

The department of architecture assists the church to develop a program, to secure a plan articulated with the program, and to obtain a building which makes possible the proper functioning of this program. At the same time it assists in effecting a building-result that is pleasing in appearance and economical in construction.

This specialized service, not only *does not cost the church anything*, but actually saves it thousands of dollars, while at the same time giving it an infinitely better structure. One church, for example, secured a far better building than had been planned by a local architect and the committee, and at the same time effected a saving of more than twenty thousand dollars, as a result of engaging the services of a department of architecture.

Even where the department makes a charge of one per cent of the proposed cost of the building for its services, this charge does not add to the cost of the structure, for the reason that the architect, when chosen, would otherwise have to make this study himself, at a cost to him often greatly in excess of one per cent, and he would therefore charge this one per cent or more for that work. In other words, the fee of the department is gladly deducted by the architect, from his fee, in exchange for the worked-out requirements. This introduces into the calculation of cost to the architect a known cost factor in place of what has heretofore been his only unknown cost factor. This is one reason why the leading architects, in consultation with these denominational departments of architecture, are now turning to church-building work. They know from the beginning their own cost factors. The department of architecture operates without financial profit to itself, even where a small fee is charged.

A department of architecture does not undertake full architectural services, but acts in the capacity of consulting architect. It first makes a careful and intensive study of the individual problem, based on the information furnished on its questionnaire forms. It not only utilizes the technical experience of its own staff, but profits by consultation with specialists in religious education and in social and recreational work, whose approval goes with the planned requirements. The study of the problem is continued by the department until the solution is finally approved by all concerned, and then the requirements are placed in the hands of the architect, who proceeds to make the working drawings, write the specifications, and supervise the work. Frequently the department works in conjunction with the architect from the very beginning of the study of the problem.

This consultative assistance is needed also in remodeling or adding to an old building.

CHOOSING THE ARCHITECT

The church, through its building committee, should consult the department of architecture before choosing its architect. One of the most valuable features of the department's specialized service will be its disinterested and unprejudiced assistance in employing an architect.

A church should choose an architect as an individual chooses a lawyer or a surgeon, for his recognized ability to render professionally a specialized service, and *should choose the best available architect and expect to pay him the standard fee.*

Reputable architects do not make their contributions to churches in architectural services, as some patrons used to pay their subscriptions to the country newspaper in " produce," and they are too busy to enter into a competition with other architects in the submission of " trial plans." One church leader said to the writer, " We cannot hope to get the leading architects interested in church building." " We are getting some of them interested," was the answer.

Unfortunately, it must be admitted that *some of our best architects are inclined to be wary of church building committees.* The writer asked one of them why this is so, and his answer was as follows: " This is my diagnosis: (1) Some church committees are not honest, for they will take my ideas, which have cost me thought and money, and will turn them over to a local architect; (2) churches have come to expect a large contribution from the architect, and they also are slow in paying what they do promise to pay; (3) always there is some young, inexperienced architect ready to take the job at any price, and I consider that a cheap architect is either ignorant or dishonest, and that he is dear at any price; (4) architects' fees are lower than those in any other profession, and, when the architect gets less than his regular fee, he must give less than his best service; (5) the cutting of the architect's fees puts a premium on dishonesty, and the reputable architect tries to avoid temptation."

The only fair thing, and the only safe thing, for a church to do is to choose a reputable architect, with the assistance of the department of architecture, ask him to submit tentative sketches, and to revise them until satisfactory, promise to pay him the standard fee, and then pay it promptly.

Of course, the architect should not only possess technical skill, but *should be in sympathy with the ideals of your church or denomination,* and this is another reason for consulting first the architectural and educational specialists before selecting your architect.

The plans contained in this book, like any ready-made drawings, are not usable as they are, but are presented here only for their educational and suggestive value. *Every new church building is a new problem in ecclesiastical architecture, and, by reason of location, program, size of lot, points of compass, and many other considerations, requires the best thought and services of experts.* Beware of the architect with ready-made " stock plans." Such plans are dear at any price.

EDUCATING THE CONGREGATION

As soon as a plan has been developed for the building committee by the department of architecture and the employed architect, on the basis of an adequate program, it should be " sold " to the church and congregation.

A congregational meeting should be called, and someone who is competent to do it in an interesting, effective way should, with enlarged tentative sketches or with lantern slides of floor-plans and exterior views, " sell " the whole program and plan to the church. There should be full and forceful explanation, with statement of reasons in every instance, and with opportunity for the asking of questions.

As soon as the church adopts the plan presented by the committee, steps may be taken for the raising of the necessary money. The most important step toward the getting of the money, however, already has been taken. There is now an appreciation of the building needs and an enthusiasm for the meeting of these needs in the plan adopted.

The thought now in the minds of the people is not merely the getting of a church-building, but of a definite, very desirable building that they have visualized, and the need for which they understand and appreciate. The proposed building is a very real and necessary thing in their thinking, and they will work together to make it an actuality.

FOR CLASS USE

1. Name and discuss five mistakes that frequently are made in the selection of a church-building committee.
2. Give five reasons why the " looks " of a church-building should not have first consideration in the making of plans.
3. Indicate what is meant by a " church program."

4. Give five reasons for seeking the assistance of educational and architectural specialists in planning a church-building.

5. What are the functions of a department of architecture? Discussion.

6. Name five essential qualifications of a competent church architect. Why should a church employ the best available architect?

7. What are the objections to "stock plans"?

8. Indicate five ways in which a congregation may be "educated" in connection with the planning of a church-building.

9. Give two women equal amounts of money for dresses, and one will have a dress that is both becoming and beautiful, while the other will have a dress that is neither serviceable nor pretty. The difference is in the selection of materials, colors, patterns, and workmanship. So in church-building.

CHAPTER II

BUILDING FOR TEACHING

No church-building can be either truly beautiful or really " churchly " that does not enable the church to express its life in effective ministry to human needs, and this cannot be accomplished today except as the church functions educationally. It is the type of work which is done in the school of the church today that will determine largely the type of church-members of tomorrow.

If the church is to be characterized by the teaching passion and skill of Christ and the early Christians, then, whatever its other equipment for other functions, it must have a place in which to teach, namely, a schoolhouse.

And this educational equipment can be obtained only when building committees cease to be governed by custom and tradition and to be limited by what has been done, and seek open-mindedly to build in harmony with the best modern ideals.

Too often the members of a building committee interpret their task to consist of the inspection of existing structures, with the result that there is erected another " composite of errors," or " sacrilegious abortion," and some more thousands of good church money are wasted.

Common sense and Christian economy would seem to suggest that churches should avail themselves of the idealism and the technical skill of architectural and educational specialists, with a view to first visualizing their needs and then building for the effective accomplishment of *their whole task,* as has been suggested in Chapter I. The Standard Dictionary defines architecture as follows: "The science and art of designing and constructing buildings, especially with reference to adaptation to their ends and to beauty of form and proportion." And a writer well says: "Noble church building is the result of the fusion of artistry, engineering, and utility."

FLOOR SPACE REQUIRED

There are required *fifteen square feet of floor-space for each student* in order to meet his needs educationally. The author has conducted a series of tests and measurements and observations, in various sections of the country, both in public schools and Sunday schools, and in company with various architects, so that this statement of floor-space requirements can be made with some assurance.

In the main auditorium, exclusive of platform, there are required seven square feet for the seating of each individual, including allowance for aisle space, but for school-work there is required more than double this space, for the reason that there is needed, not only seating-room, but also room for tables or desk-chairs, and for the moving about of workers and students.

Ordinarily the church will need to provide schoolrooms for about as many as can be seated in the main auditorium. This means more than twice as much floor-space in schoolrooms as in auditorium. And it means that, in planning a building, there must be reserved for school purposes at least as much ground-space as for the main auditorium.

In other words, while there is needed more than double the floor-space for school purposes, there is required only about the same ground-space, for the reason that there will be two stories of schoolrooms in the same height that is required for the auditorium.

SCHOOLROOMS NEEDED

In building for the school-work of the church, *there are needed departmental assembly-rooms. It is agreed among leaders in religious education that the modern school of the church cannot be administered most effectively as a whole in one large room.* It is understood that "God has graded the students," and that he has graded the materials of religious education, and it is recognized that the least we can do is to grade the building.

In effective educational work, there must be a coordinating of grading in students and grading in school, and this involves graded lessons, graded methods of teaching, graded orders of worship, graded buildings and equipment.

The modern Sunday school, consequently, is organized departmentally. And, while there is not complete agreement as to the number of departments and their proper designation, the following outline is in accordance with the best consensus of opinion at the present time: (1) Beginners' Department, ages about four and five; (2) Primary Department, ages about six to eight; (3) Junior Department, ages about nine to eleven; (4) Intermediate Department, ages about twelve to fourteen; (5) Senior Department, ages about fifteen to seventeen; (6) Young

People's Department, ages about eighteen to twenty-four; (7) Adult Department, ages about twenty-five and over.

This ideal for the school of the church involves a radical departure from the old one-lesson, one-assembly Sunday school of our fathers. And it involves as the next logical and necessary step a radical departure from the old method of building. We need, not one room, but many rooms.

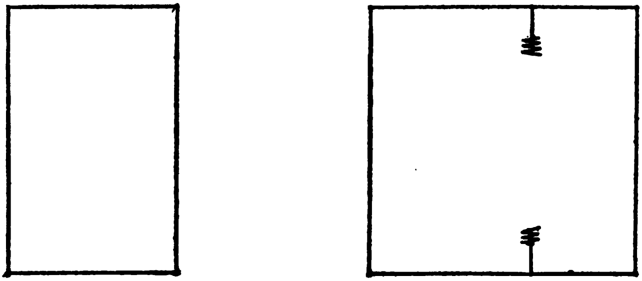
HISTORY OF BUILDING

A brief summary of the history of building for the school-work of the church may be interesting and illuminating. First, there was the one oblong room, used for preaching, into a corner of which the Sunday school was allowed to come, with its three men, seven women, and seventeen children.

Then, later, there was a " Sunday school room " on one side, in order to save the carpet and the " sanctity of the sanctuary." This room was connected with the " main room " by a movable partition, so that the extra space could be utilized on special occasions as an enlargement of the auditorium.

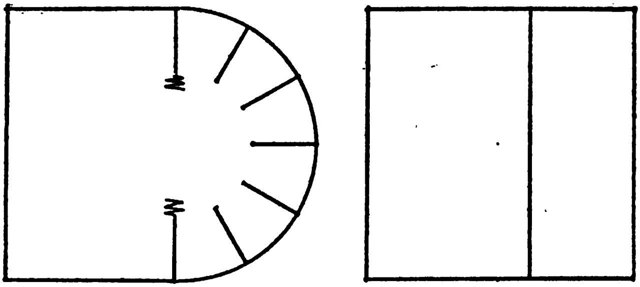
The next step was the " Akron Plan," which was an enlargement of the " Sunday school room " with a number of smaller part-rooms, or stalls, for class-work, the whole school being together for " opening exercises."

The next period in church building may be called *the " wilderness period," during which time the children of the church have been wandering in the Akron plan wilderness,* trying to find a place where they could sing " Onward, Christian Soldiers " without hearing, through a movable partition, "Bringing in the Sheaves," with neither a war nor a harvest possible, or trying to sing "Will There Be Any Stars in My Crown?" without hearing, from beyond a movable partition, "No, Not One."



ONE-ROOM CHURCH BUILDING

SAME BUILDING WITH ADDED SUNDAY SCHOOL ROOM



SAME BUILDING WITH AKRON PLAN

CHURCH AUDITORIUM WITH SEPARATED EDUCATIONAL UNITS

DIAGRAM Nº 1

We are entering now the promised land of the departmental building, composed of departmental units, providing for the complete separation of department from departments, and making possible separate, graded orders of worship and graded class instruction.

This involves solid, sound-proof partitions and floors, and hinged doors opening into halls, or corridors, so that sounds, in order to get from one department to another, must go through a solid partition or floor, or through two hinged doors and a corridor.

It involves *complete departure from all Akron variations and complications, and the absolute elimination of all types of movable partitions from the church-building.*

MOVABLE PARTITION FALLACIES

One is surprised to read, in a comparatively recent book on building for the church, a chapter advertising manufacturers of movable partitions and making a plea for them on educational grounds—"The modern Sunday school building must make large use of folding movable partitions."

One could understand a plea for the use of screens or curtains as a temporary expedient, but *there is absolutely no valid argument for any type of movable partition in any part of the modern church-building,* as the author hopes to demonstrate in this book, if the reader will keep his mind open and " follow on."

Any partitions that lift, roll, fold, or slide are undesirable, for the following reasons:

(1) *They are inadequate.* They exclude distracting sounds only in part, and do not provide that degree of

separation which is essential to the best results in both assembly-work and class-work.

(2) *They are expensive.* They cost more than permanent partitions and solid doors, and they do not conserve floor-space, as some have thought.

(3) *They are unsightly.* They violate the fundamental laws of esthetics and therefore make impossible attractive room-finishings and wall-decorations.

(4) *They are troublesome.* They must be moved at least twice every week, and sometimes their manipulation is quite difficult. When they "stick," they cause hilarity among the younger students, and develop an "atmosphere" unfavorable to religious education.

(5) *They are anti-educational.* They are not found in good public-school buildings, and they must be eliminated in church-school buildings.

INDIVIDUAL CLASSROOMS NEEDED

The author has had twelve years' experience as a teacher in college and in training-schools, and he has never taught a class where seven or seventeen other teachers were teaching other classes in the same room at the same time.

He could not have retained his self-respect as an educator if he had been willing to try to teach under such conditions, in the midst of a distracting hubbub, and yet the average teacher in the school of the church has been compelled to compete with just such a confusion of unnecessary noises.

In some instances, effort has been made to reduce these distractions to a minimum by the use of curtains or screens and by reducing the size of the class, but at best the effort has been "making the best of a bad situation."

When there are a number of classes in one room, under the best management, there are many voices outside the class clamoring for attention, through a variety of sensations, and there is a continuous nerve-irritation which makes impossible the best educational results.

Of course, some exceptional workers do obtain some good results under these bad conditions, but they would obtain far better results if each class had its own separate classroom, with its solid partitions and hinged door.

CLASSROOMS ARE PRACTICABLE

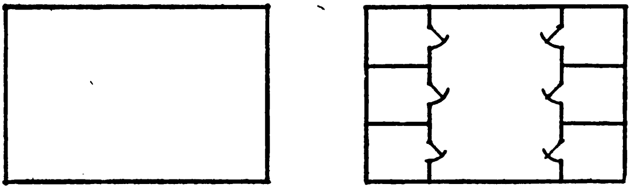
It is possible for any church having a Sunday school numbering three hundred or more to have individual classrooms as well as departmental assembly-rooms for practically the same amount of money that the assembly-rooms alone would cost.

This is true for the reason that it requires no more floor-space to care for a given number of students in a department with individual classrooms and assembly-room than with assembly-room alone. Explanation of this fact lies in the further fact that each student requires only six square feet for assembly purposes and only nine square feet for classroom purposes. The six square feet for assembly and the nine square feet for class together make the fifteen square feet required when all the students of the department are handled in the one large room.

The important fact then is, if the church is able to build at all for a given number of students in a given de-

partment, providing fifteen square feet to the student, this same space properly utilized will provide also individual classrooms as well as assembly-room.

In other words, when the classes of a department are assembled in class around tables or in desk-chairs, in the one room without partitions, there must be left, between class and classes, room for the free movement of workers and students, and also there must be sufficient floor-space between classes to make possible a fair degree of removal of class noises from class noises.



DEPARTMENTAL UNIT
WITHOUT CLASSROOMS

DEPARTMENTAL UNIT
WITH CLASSROOMS

DIAGRAM N°2

Now, when each class is assembled in an individual classroom, a student may be seated with his back against a wall with another student in another class having his back to the same wall, and also there is no occasion for the moving about in the classroom of anybody outside the class.

Thus nine square feet is all that is needed by each student in an individual classroom, but the same student needs fifteen square feet when his class is in the large room with other classes. And for assembly purposes, during the departmental order of worship, in the departmental assembly-room, there is needed for chairs a little less space than in the large church auditorium, so that six square feet for each student is quite sufficient.

The general truth is: If the church is able to provide an assembly-room for a given department, then it can also provide individual classrooms, with the same floor-space and at practically the same cost.

(For additional data and illustrative plans, see Chapters VI to IX and Standards.)

FOR CLASS USE

1. Why should the church build for teaching? Give five reasons.
2. Why do we employ specialists in surgery, business, and education? Give five reasons. Are these reasons also good reasons for availing ourselves of the assistance of specialists in planning a church-building?
3. Show what proportion of the lot-space should be devoted to the educational portions of a church-building, and why.
4. Show why departmental assembly-rooms are needed for the school of the church.
5. Give in brief outline a history of building for the distinctively educational work of the church.
6. Why are movable partitions, of every type, undesirable in a church-building? Give five reasons.
7. Show why every class in the Sunday school should have a separate classroom.
8. Show that classrooms are practicable. Give reasons in detail.

CHAPTER III

DEPARTMENTAL REQUIREMENTS

In our planning, we should give first consideration to the children and young people, instead of building with only the adults in mind, and then thinking of the children afterward, when it is too late to make adequate provision for them. It is a serious mistake to put them into a basement or some other unattractive, unsuitable place.

CARING FOR THE BABIES

Churches are finding it to be the part of wisdom to build a separate room for the little ones of the congregation, those who are one, two, and three years of age.

This room should be easy of access, on the main floor, near the main auditorium and the schoolrooms, but at the same time wholly separated from them by solid partitions and by hinged door and corridor. There must not be a connecting door even between this room and the Beginners' room.

The room should be well-lighted and well-ventilated, with low ceiling and windows, with rug, with kindergarten chairs eight and ten inches high, with various kindergarten equipment and educational toys, and with a connecting toilet of its own. It should be attractively but simply furnished, with no pronounced, nerve-wrecking colors.

This babies' room, or Cradle Roll room, will be used for the Cradle Roll class during Sunday school, since better work can be done in the Beginners' Department when these younger children are not present, and as a nursery during the preaching service and any other meetings which the mothers will wish to attend.

It has been found sometimes that mothers are loath to leave their children in the care of others in a church-nursery, but this need not be true where there is a suitable room and where there is assurance that the children will be under competent, careful supervision.

(For additional data and illustrative plans, see Chapters VI to IX and Standards.)

BEGINNERS' DEPARTMENT

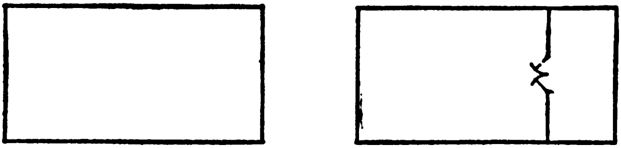
For the Beginners, or kindergarten children, about four and five years of age, there should be a room completely separated from all other rooms by solid, sound-proof partitions, and by a hinged door opening into a corridor.

This room should be on the main floor, easily accessible, with no steps, or at least with but few steps. It may be on the second floor, but never in a basement.

These children are in the " sense-period " of life, when they are profoundly influenced by their physical surroundings. It is exceedingly unfortunate when we allow basement mustiness and ugliness to get into their nervous systems, to be associated in their thinking with religion, the Bible, and the church. If we must teach in a basement, let the pupils be adults.

The Beginners' room should be near the Primary room, but with no immediate connection, and with its own toilet, except in a small school, where there should be a joint toilet for the Beginners' and Primary departments. There should be provided a suitable cloak-room.

The finish of the interior should be in scale with the size of the children and the ceiling should be low, usually about eight feet. The fireplace mantel-shelf should be but about two feet four inches above the floor level. The windows should have clear or obscured white glass, and should be provided with shades.



BEGINNERS' UNIT
ONE ROOM

BEGINNERS' UNIT
TWO ROOMS

DIAGRAM Nº 3

In the furnishing of the room, the stronger tones of red, blue, and yellow should be avoided because of their nerve-irritating qualities. The warm tints of yellow are recommended for the color scheme in room with north light, and the cooler tints of green, blue green, and gray in room with south light.

In the room, there should be: A rug; standard kindergarten chairs of three heights—eight, ten, and twelve inches; a piano; a cabinet for materials; suitable teaching-pictures, hung low; and small, low, round tables for class groups. In one end of the room, separated from the children, there should be some adult seats, for the use of visitors. The room, of course, should be kept clean and in order.

Inasmuch as most of the teaching in this department is done with the children seated in a circle, kindergarten fashion, the one room will be sufficient, provided there are fewer than twenty-five children altogether.

If there are more than twenty-five children, however, there will need to be a second room about half as large as the first, for the table work and for dramatizing stories, the whole department being divided into two groups, one of which will be using the smaller room while the other is doing the circle work in the larger room.

This one room may be used for all the week-day teaching and activities, as well as the Sunday instruction, for the children of this age, *but should not be used for any meetings of adults,* since it is not suitable in its proportions, its finishings, or its furnishings.

In a very small school the Beginners may be taken care of in the Primary room, but it is far better for them to be separated in accordance with the above suggestions.

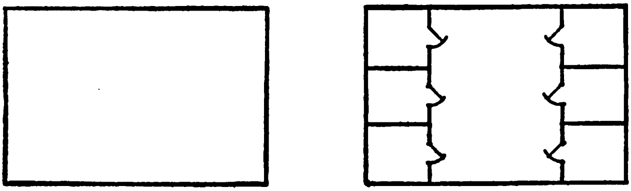
(For additional data and illustrative plans, see Chapters VI to IX and Standards.)

PRIMARY DEPARTMENT

In the Primary Department of the school of the church, we have children about six to eight years of age.

For this department, there is needed *an assembly-room in which may be conducted the departmental group-training through a graded program of worship and purposive activity. There are needed also complete, separate classrooms, for the class group-training, through story-telling and dramatizing, and other suitable types of expressional activity.*

In dividing the floor-space of this departmental unit, therefore, there will be six square feet of space for each student in the assembly-room, and nine square feet of space in the classrooms. The classrooms may be on two sides of the assembly-room, and opening into it, or may be near-by, each room opening into a corridor. There will be needed six classrooms for a department numbering fifty to sixty, and more or less according to the size of the department.



PRIMARY UNIT
ONE ROOM

PRIMARY UNIT
ASSEMBLY-ROOM AND
SIX CLASSROOMS

DIAGRAM No 4

This departmental unit should be near that of the Beginners, but not connected immediately by door, and should be on the main floor, easily accessible, though there is no serious objection to the second floor. *It must be kept out of a basement.* There should be a departmental toilet, except when the school is small, in which case there may be a joint toilet for the Beginners' and Primary departments. There should be provided a suitable cloak-room.

The finish of the interior should be in scale with the size of the children, and the ceiling should be low, usually about eight feet. The windows should have clear or obscured white glass, and should be provided with shades. *In the furnishings, red and other pronounced colors should be avoided, and there should be a controlling color-scheme.* The warm tints of yellow are recommended for room with north light, and the cooler tints or green, blue green, and gray for rooms with south light.

(For color-scheme data, see Standards, Section IV, H. 1.)

In the assembly-room there should be: A rug; chairs of different sizes; a piano, a blackboard; table or desk for superintendent; cabinet for supplies; suitable teaching-pictures, hung low; seats for adult visitors. In each classroom there will be: A rug; low, round class-table, stained the color of the woodwork; suitable chairs, twelve and fourteen inches high; teaching-pictures and posters.

These rooms *may be used for all the week-day teaching activities, as well as the Sunday instruction, for the children of this age,* but should not be used for any meetings of adults, since they are not suitable in proportions, in finishings, or in furnishings.

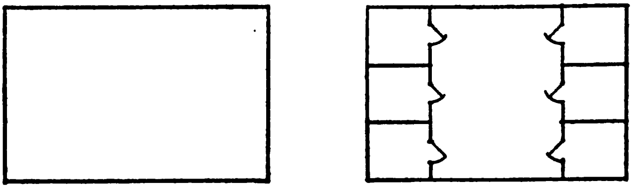
In a very small school, the Primary Department may be taken care of in the same room with the Beginners, but it is far better to separate the two departments, in accordance with the above suggestions.

(For additional data and illustrative plans, see Chapters VI to IX and Standards.)

JUNIOR DEPARTMENT

In the Junior Department, we have grades, four, five, and six in the public school, ages about nine, ten, and eleven. For this department there is needed *an assembly-room in which may be conducted the departmental group-training, through a graded program of worship and purposive activity. There are needed also complete, separate classrooms, for the class group-training, through story-telling, molding, dramatizing, and through various types of expressional activity.*

Probably there are more reasons for both departmental and class separation in this department than in any other, for the reason that these boys and girls are in the " noisy " age, the " do-and-dare " age, the "see-everything-that-is-going-on-around " age.



JUNIORS' UNIT
ONE ROOM

JUNIORS' UNIT
ASSEMBLY-ROOM AND
SIX CLASSROOMS

DIAGRAM Nº 5

In dividing the floor-space in this departmental unit, there will be allowed six square feet of space for each student in the assembly-room, and nine square feet of space in the classrooms. The classrooms may be on two sides of the assembly-room, and opening into it, or may be near-by, each room opening into a corridor. There will be needed six classrooms for a department numbering fifty to sixty, and more or less according to the size of the department. *This departmental unit may be on the second floor, or even on a third floor, if the building is fire-proof, but should be kept out of the basement.* There should be two toilets near the departmental unit, one for the boys and one for the girls. In a small school, two toilets will serve both for Junior and Intermediate departments. There should be a suitable room for hats and wraps adjacent to the departmental unit.

The windows should be clear or obscured white glass, and should be provided with shades. (For an admirable discussion of colors and color-schemes, see Standards, Section IV, H. 1.)

In the assembly-room there should be the following: A rug or battleship linoleum; chairs of two heights, fourteen and sixteen inches; piano; flat-top desk for the superintendent; blackboard; maps; teaching-pictures; Junior mottoes; graded song-books; honor roll; bulletin-board; reference library; stereographs; and cabinets for curios and supplies. In each classroom, there should be: A rug, round table and chairs, or preferably desk-chairs; a blackboard; teaching-pictures and posters.

This departmental unit should be used for all week-day teaching and club activities, as well as for the Sunday instruction, for the students of this age, but should not be used for any meetings of adults, since it is not suitable in its proportions, its finishings, or its furnishings.

Where there is no room at all for this department, it is advisable to put the Juniors into a tent or a rented room near-by.

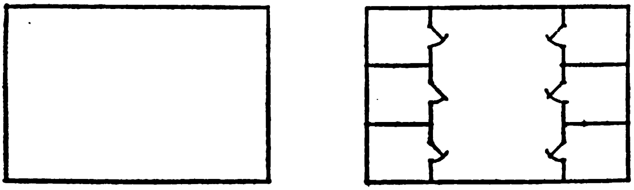
(For additional data and illustrative plans, see Chapters VI to IX and Standards.)

INTERMEDIATES AND SENIORS

In the Intermediate Department, we have students of junior high-school age, about twelve, thirteen, and fourteen.

For this department there is needed *an assembly-room and individual classrooms,* just as for the Junior Department, with such differences in equipment as may be demanded by the differences in interests and needs.

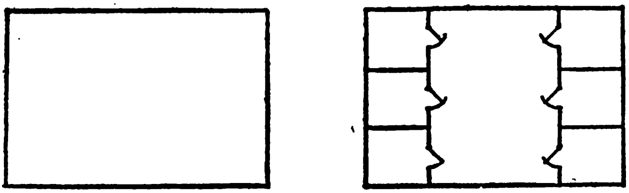
And this departmental unit too should be used for all



INTERMEDIATES' UNIT
ONE ROOM

INTERMEDIATES' UNIT
ASSEMBLY-ROOM AND
SIX CLASSROOMS

DIAGRAM Nº 6



SENIORS' UNIT
ONE ROOM

SENIORS' UNIT
ASSEMBLY-ROOM AND
SIX CLASSROOMS

DIAGRAM Nº 7

the week-day teaching and club activities, as well as for the Sunday instruction, for all the students of this age.

In the Senior Department we have students of senior high-school age, about fifteen, sixteen, and seventeen.

The needs for this department are very similar to those of the Intermediate Department, with such differences in equipment as may be demanded by the differences in interests and characteristics.

The equipment should be utilized to the fullest extent for both Sunday and week-day activities. In a small school this department may be handled with the Young People's Department in the assembly-training, in a program of worship, but always there should be the separate classrooms. If there are fifty or more in the department, at least six classrooms will be needed.

(For additional data and illustrative plans, see Chapters VI to IX and Standards.)

YOUNG PEOPLE AND ADULTS

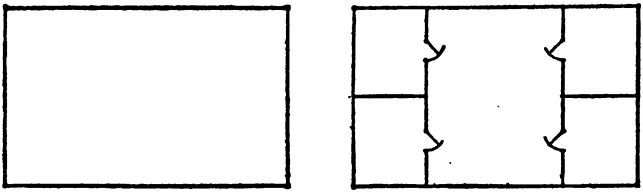
In the Young People's Department, we have students from about eighteen to twenty-four years of age.

The needs for this department are very similar to those of the Senior Department, with such differences in equipment as may be demanded by the differences in interests and characteristics.

In this department, the classes may be larger, but, in a department with ninety or more, there should be at least four separate classrooms, two for young men and two for young women.

One of the rooms may be utilized as a teacher-training room, though, more and more, all the classes in this department will be training classes, as we secure training lessons and better equipment and teaching.

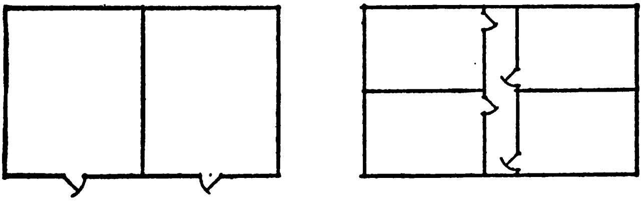
In some cases it will seem best to combine this department with the Senior Department in the program of worship, but never for class-work. In some cases it may seem best to join with the adults for a brief period of worship, and, in other schools, each class will conduct its own period of worship.



YOUNG PEOPLE'S UNIT
ONE ROOM

YOUNG PEOPLE'S UNIT
ASSEMBLY-ROOM AND
FOUR CLASSROOMS

DIAGRAM N° 8



ADULTS' UNIT
ONE OR TWO ROOMS

ADULTS' UNIT
FOUR ROOMS

DIAGRAM N° 9

The Young People's assembly-room should be utilized, not only for a program of worship on Sunday, but for the young people's meetings of all kinds, Sunday and week-day, devotional, missionary, instructional, social.

There are needed at least two classrooms for adults, one for men and one for women, in a small Sunday school, and in a school of five to seven hundred there ought to be at least four classrooms for adults.

Usually these classrooms will be on the main floor, though they may be on the second floor, or in the basement, if any classes are going to be there. *The largest of the adult classrooms should be on the main floor, easy of access, and should be utilized for as many purposes as possible*—teaching, prayer-meetings, missionary meetings, socials, lectures, etc.

Most adult classes will prefer to have their own service of worship, but it would be an advantage if all the classes in the department could unite for a fifteen minutes' program of worship in the largest classroom or in the preaching auditorium. If this program of worship is built around a definite theme, and is so conducted that it evokes real worship, it will abound in teaching values.

(For additional data and illustrative plans, see Chapters VI to IX and Standards.)

REMODELING BUILDINGS

In any additions to or remodeling of an old building, the departmental requirements, as set forth in this chapter, must be kept in mind. Sometimes there is lot space or money for only two or three departments. In some cases it is possible to add a story to the educational portion or to modify the interior of the main auditorium. Where there is a Sunday school room with a high ceiling, and with rooms and movable partitions on the sides and in galleries, Akron style, it is possible to introduce a second floor by extending the galleries across the assembly-space and putting in sound-proof partitions, thus almost doubling the floor-space and at the same time securing better departmental and class separation.

FOR CLASS USE

1. Why should a church provide a special Cradle Roll room? Are there any arguments against it?
2. Outline the provisions for the Beginners' Department. What other provisions should be made for the Beginners?
3. What would you add to the provisions for the Primary Department as outlined in this chapter?
4. Why do the Juniors especially need departmental and class separation? Describe the best Junior equipment with which you are acquainted.
5. Describe the provisions that should be made for Intermediates, and give reasons. Give arguments against combining with any other department.
6. Describe the provisions that should be made for Seniors, and give reasons.
7. Outline the desirable provisions for the Young People's Department.
8. Indicate what provision should be made for the Adults. Why should some classrooms for young people and adults be larger than others?

CHAPTER IV

AUDITORIUM AND OTHER ROOMS

The church needs one large room, and usually only one. If there is built a second auditorium of about equal size, called the " Sunday school room," then there is left neither space nor money for an adequate provision for the real school needs of the church. No church today can afford to make this mistake.

The one large auditorium may be used, not only for preaching, but as the place for assembly for the school of the church as a whole, once every Sunday or preferably once every three months. Not only may the main auditorium be used for preaching and school-assembly, but also for lectures, entertainments, pageants, pictures, dramatizations, etc.

Some formalists may object to this larger use of the main auditorium, but there would seem to be *no real reason why an " evangelical church " should not consider that anything that is promotive of religious life is "holy" and " sacred," and therefore proper in the " sanctuary."* At the same time, where there is a gymnasium or recreation hall, it may be advisable, for various reasons, to utilize this for entertainments, pictures, dramatizations, etc.

MAIN AUDITORIUM

The main auditorium should seat an audience comfortably and suitably for seeing and hearing speaker and choir, and should be pleasing in its proportions, its finish, its decorations, and its furnishings.

The consensus of critical opinion favors a room that is oblong in form, never more than twice as long as wide, *with the pulpit at one end,* for the reason that it is advisable that the maximum number of auditors should be as nearly in front of the speaker as possible, since the " angle of vision " in speaking is a right angle, the speaker's maximum sweep of vision and direction being one-fourth of a circle.

It is inadvisable to place the pulpit on a long side, for the reason that too large a proportion of the audience are outside the angle of vision. It is bad also to place the pulpit in the corner of the room, for the reason that the esthetic effect is inferior and the cost of construction is increased. A semi-circular form of room is inadvisable, for many reasons.

For expansion, *galleries, or balconies, are advisable rather than extra rooms on the side or at the rear with movable partitions.* They look better, they assist the acoustics, they cost less, and they conserve floor-space for educational and other uses. When not in use, galleries are not particularly noticeable.

Except in a very small auditorium, there should be galleries practically all around the room, with stairways tying them to the pulpit, so that those who are seated in the gallery will feel that they belong to the audience and may on occasion easily reach the pulpit platform or the floor at the front of the auditorium. The galleries should be as low as the building laws will permit and as is consistent with good seeing and hearing on the part of those seated underneath and with a proper appearance.

There are those who object to galleries in the church auditorium, on esthetic grounds, but the author is not willing to grant that galleries need necessarily "make the room look like a theater or a barn," or that it is impossible to secure with them a "churchly" appearance and a "worshipful" effect. *Galleries, properly constructed, make for economy in construction, and at the same time provide a better auditorium.*

Contrary to the view of some, *galleries positively assist in the promotion of an atmosphere of worship.* They are mistaken who think that it is possible to secure worship through rows of pillars, height of ceiling, and elaborateness of decoration. It may be possible thus to secure awe, but awe is a very different thing from worship.

Worship may include awe, and must include reverence, but it includes mainly intelligence, understanding, and appreciation. *This true, rational worship is best promoted through a vital, practical preaching and a teaching-ritual in which the largest proportion of the audience participates most intelligently.*

Such worship demands an auditorium rather than a "spectatorium." This means an auditorium that is treated simply and beautifully and that enables the largest proportion of the audience to see and hear most easily and comfortably. This means such an auditorium as has been suggested above.

RECREATION HALL

The church in our day needs to make provision for the social and recreational life of its constituency, if it is to attract and hold the young people and at the same time Christianize and spiritualize their play-life. If the play-life is right, the work-life will be right.

The simplest approach to the problem, for the average church, is to build a gymnasium, and to use this also as a dining-room and for moving pictures, dramatizations, pageants, etc. If this room is used for educational purposes at all, it may be used by adult classes.

In building a gymnasium, it is advisable, if possible, to build it at least minimum size for basket-ball, namely, 40 x 60 feet, with a ceiling height of 19 feet, and with galleries for spectators. Sixteen feet are sufficient if there are no galleries.

As a rule it is desirable that this recreation, or gymnasium, room should be a separate building, and not a basement-room, under the main auditorium or school-building, or a top room. It will cost less to build it thus separately, if there is lot-space, and there will be then no conflict between its use and the other different uses of other parts of the church-building.

A swimming-pool in a church plant is advisable only where provision is made for sanitary maintenance and competent supervision. Bowling-alleys constitute an attractive feature in some church-buildings.

(For detailed treatment of recreational provisions, see Standards, Section VI.)

PRAYER-MEETING AND CLUB-ROOMS

The largest adult classroom, with street front, may be utilized for various purposes for which the main auditorium is too large, such as prayer-meetings, larger board meetings, missionary meetings, social gatherings, etc. Sometimes it is also the ladies' parlor.

This room should have a maximum seating capacity of about one-fourth of the floor-sittings of the main auditorium, and should be equipped with movable chairs, fireplace, kitchenette, and retiring-room and toilet.

In some cases the various educational units will be utilized also as club-rooms. Their uses will include socials, games, committee meetings, etc. In other cases, particularly in a larger building, it will be possible to provide special club-rooms for the boys and girls and for the young people. These special club-rooms might well be placed in the basement, but not necessarily so.

Always it is desirable to have, if possible, a ladies' rest-room, with toilet adjoining, and a retiring-room for men, with toilet adjoining.

(For additional data and illustrative plans, see Chapters VI to IX and Standards.)

LIBRARY AND BUSINESS ROOMS

There should be at least one library-room in every church-building, with space for a wide and wise selection of books for both the workers and the students, and also for maps, mission materials, curios, etc. In a larger plant, it will be advisable also to have a reading-room, provided it be constantly and properly supervised.

In every church-building, there will be at least one business-office, with a door-bell. Here the pastor will keep certain regular office-hours; here the church secretary, if there be one, will preside; here the church school superintendent will have a desk; here the school secretary will keep his records; here the church clerk will keep his card-files; here will be stored the school supplies, in substantial cabinets.

There is needed also a room smaller than the prayer-meeting room, for the official board and for various committees. This room may be utilized also as an adult classroom, and possibly, too, as a choir-room.

OTHER ROOMS

In any larger building, there will be a janitor's room, with a door-bell, so that he can be summoned at any time. In most buildings, a kitchen will be required, and, in larger buildings, also a kitchenette on each floor.

Cloak-rooms, or coat-rooms, are desirable in connection with each educational unit. In addition to these, usually there should be provided a larger coat-room in connection with the main auditorium, particularly if adequate provision is made for the checking and the prompt and careful handling of wraps and hats and umbrellas. Well-managed coat-rooms will assist in popularizing the church, and also will make its meetings more effective.

Certain educational rooms can be utilized as social rooms. One of the adult classrooms can be used as a "mothers' room." One of the young people's classrooms can be used as a "teacher-training" room.

Certain storage rooms will be needed. Care should be taken, of course, to provide suitable choir-rooms, dressing-rooms, and service-rooms.

Probably in most church-buildings, there should be a pastor's study, though some pastors prefer to study at home. The pastor's study should be separate from the business office of the church. Its requisites are quiet, seclusion, and cheerful comfort.

(For suggestions regarding the various types of rooms that are needed, and for detailed requirements, see Standards.)

FOR CLASS USE

1. Give the arguments against building more than one large auditorium for a church.
2. Give the arguments for galleries in a church auditorium.
3. Give the arguments for a recreation hall or gymnasium. Is it advisable to have a swimming-pool in a church-building? Why?
4. State the essential requirements for a prayer-meeting room.
5. Is there good reason for club-rooms that are used for nothing else? Or is it advisable to use educational rooms for this purpose? Discussion.
6. Give the arguments for a library-room. Indicate the various purposes for which such a room may be utilized.
7. Indicate the value of a business office in a church-building, and show how it may be used to advantage.
8. Name other rooms that are desirable in a church-building. Give reasons why consideration should be given room-needs in the very beginning of the making of building-plans.

CHAPTER V

SIZE OF BUILDING

In planning a church-building, it is exceedingly difficult properly to determine its size and proportions. It is bad to have a building too small, and it is bad to have one too large. In any case, however, the structure should be a true expression of the best ideals of good church-building.

FACTORS IN THE PROBLEM

It is well to give careful consideration to all the factors in the problem, at the very beginning of the setting up of a program with a view to planning for a new building.

1. *Is the community new or old?* Is the community new, or comparatively new, or is it an old, established community? Are the people moving in or are they moving out? Manifestly, the answer to this question will affect materially the size of any building in contemplation.

2. *Does the community abound in children?* Is the proportion of babies in the community large or small? Do the young people or the old people predominate in the membership of the church? The answer to this question will affect both the size and the proportions of the contemplated building.

3. *What is the nature of the community vocationally?* Is it a rural or an urban community? If rural, what are the chief products? If a city community, is it residence or business, factory-town or school-town? The answer

to this question will affect both the size and the proportions of the contemplated building.

4. *What is the church strength of the community?* Is it a church-going community? Is it predominantly Protestant or Catholic? How many, how strong, and how near are the other Protestant churches? Has this particular church lived up to its opportunities, doing its share of the work and reaping its share of the rewards? What probability is there of increase, with adequate building and equipment?

5. *What are the greatest needs of the community?* Of course there is, inevitably, more or less competition between church and churches, but at the same time each church should seek to do the things that have been neglected by the other churches and to meet the needs that are not met by other institutions in the community. For instance, if the athletic and other recreational needs of the young people of the community already are being adequately cared for, it would be a mistake for a church to invest largely in a recreational plant. On the other hand, a gymnasium and swimming-pool might be the provision most needed in a community. One church, under the leadership of a new pastor, came to see that no one of the eight churches of the community was caring properly for the young men, and it scored a distinct triumph in equipping itself to care adequately for their recreational, social, and religious needs.

SIZE OF AUDITORIUM

It is a mistake to build an auditorium large enough to care for the exceptional audiences that may be expected only once in a year or two. *It is better to turn people away one-fourth of the time than to have the auditorium only half filled three-fourths of the time.*

Empty pews are among " the devil's chief allies," and, when you turn from this theological statement to the psychological aspects of the question, it must be recognized that the reflex effect of any considerable number of empty seats upon both the speaker and the audience is exceedingly bad. *More good can be accomplished with a small audience in a room that is filled than with a larger audience in a room that is only partially filled.*

It is a mistake also to build an auditorium large enough to accommodate the people who will come regularly to hear an exceptionally able and popular pastor. No one can tell how long he will live or when he will go to another church. While he is here, let him preach to one audience in the morning and to a different audience in the evening, if the auditorium is not large enough to seat them all at one time.

Another very important reason why the church should guard against building too large an auditorium is that it will thus make it impossible to build adequately for its other functions. It will have neither space nor money left for its educational and recreational needs. One of the saddest spectacles in the world is a new church-building that is nearly all auditorium, with its school and other organizations crowded into outlying corners and a basement.

An auditorium that will seat half of the enrolled members is large enough for the average church, though in some communities it will need to be larger. In an exceptional community, it might be smaller.

SCHOOLROOMS

The average church has a Sunday school attendance about equal to its attendance at the preaching service, and about equal to half its membership enrolment. In the average Sunday school, or church school, about one-half are church-members. This means that only one church-member in four attends Sunday school.

If, in the case of any individual church, the Sunday school attendance falls below this average, then it will not be safe to build only for the present school, for the reason that a suitable building, with proper equipment, will make a much larger school possible.

The conclusion is that a church ought to build with a view to accommodating at least as many in its school as in its main auditorium. This means about the same ground-space for the school as for the main auditorium, and double the floor-space.

The plain truth is that the average Sunday school could be doubled in attendance, within a year, with suitable equipment and reasonable effort.

The tendency in church-building is toward a larger proportionate provision for the distinctively educational work of the organization, and this more adequate provision for the realizing of the educational ideal will mean a marked increase in the size and efficiency of the church, and, incidentally, larger audiences at the preaching services.

DEPARTMENTAL UNITS

In planning for the departmental units of the school of the church, it is not wise, as a rule, to follow the present proportions of attendance, speaking of the school departmentally. For instance, the attendance in the Intermediate Department may be quite small as compared with that in the Junior Department, but it ought to be about the same, and probably could be greatly increased with proper equipment and supervision. The Intermediates can be held if they are properly provided for and understandingly handled. So also the present attendance in the Primary Department or in the Young People's Department may be unduly small because of lack of adequate provision.

On the basis of a number of studies and of careful estimates, the following proportions are suggested as a practical working basis for the average church: (1) Beginners' and Cradle Roll departments, ages about three, four, and five, 10%; (2) Primary Department, ages about six, seven, and eight, 10%; (3) Junior Department, ages about nine, ten, and eleven, 10%; (4) Intermediate Department, ages about twelve, thirteen, and fourteen, 10%; (5) Senior Department, ages about fifteen, sixteen, and seventeen, 10%; (6) Young People's Department, ages about eighteen to twenty-four, 20%; (7) Adult Department, 30%.

Thus for a school of six hundred, provision should be made as follows: Beginners' and Cradle Roll departments, 60; Primary Department, 60; Junior Department, 60; Intermediate Department, 60; Senior Department, 60; Young People's Department, 120; Adult Department, 180.

For a school of three hundred, provision should be made as follows: Beginners' and Cradle Roll departments, 30; Primary Department, 30; Junior Department, 30;

Intermediate Department, 30; Senior Department, 30; Young People's Department, 60; Adult Department, 90.

For a school of twelve hundred, provision should be made as follows: Beginners' and Cradle Roll departments, 120; Primary Department, 120; Junior Department, 120; Intermediate Department, 120; Senior Department, 120; Young People's Department, 240; Adult Department, 360.

The Bureau of Architecture of the Methodist Episcopal Church has presented the following as the proportions which have been found to obtain in the average Sunday school in the past: (1) Beginners' and Cradle Roll departments, 10%; (2) Primary Department, 12%; (3) Junior Department, 14%; Intermediate Department, 10%; Senior Department, 10%; Young People's Department, 12%; Adult Department, 30%.

We recommend, however, the proportions as given above, instead of these last named proportions, as being desirable and as being more practical in planning for the average school of the church, for the reasons presented in the preceding discussion. Of course, in the exceptional community, it may be necessary to make proportionately larger provision for some one department. In a university community, for instance, the proportion of young people may be unusually large. In another community, the proportion of the younger children may be exceptionally large.

(See illustrative plans in Chapters VI to IX.)

NUMBER OF ROOMS

For a Sunday school of six hundred, the minimum requirements are as follows: (1) Beginners' and Cradle Roll departments, three rooms; (2) Primary Department, assembly-room and six classrooms; (3) Junior Department, assembly-room and six classrooms; (4) Intermediate Department, assembly-room and six classrooms; (5) Senior Department, assembly-room and six classrooms; (6) Young People's Department, assembly-room and four classrooms; (7) Adult Department, four rooms. This is a total of forty rooms for school purposes.

In planning the Junior Department unit, for instance, it must be kept in mind that each student will require fifteen square feet, six square feet in the assembly-room and nine square feet in the classroom. This means, for a Junior Department of sixty, nine hundred square feet. In dividing this space, the assembly-room will be about 14 x 25 feet, with three classrooms on each side about 8 x 12 feet.

For a school of three hundred, the minimum requirements are as follows: (1) Beginners' and Cradle Roll departments, two rooms; (2) Primary Department, one assembly-room and two classrooms; (3) Junior Department, one assembly-room and two classrooms; (4) Intermediate Department, one assembly-room and two classrooms; (5) Senior Department, one assembly-room and two classrooms; (6) Young People's Department, three rooms; (7) Adult Department, three rooms. This is a total of twenty rooms for school purposes.

In planning the Junior departmental unit, for instance, in a school of three hundred, it will be necessary to provide, for the thirty Juniors, an assembly-room about 11 x 17 feet, or one hundred eighty square feet, and two classrooms 8 x 12 feet each, a total of one hundred eighty square feet for the two rooms. The total floor-space for a departmental unit, for this capacity, will be about three hundred sixty square feet, the dimensions being about 17 x 23 feet for the whole departmental unit.

This means that one class will meet in the assembly-room, and two in classrooms, making possible a closely graded, departmentalized school even where the total number in the whole school is only three hundred or less.

In a small building, with a school capacity of one hundred fifty, the minimum requirements are fifteen rooms, with a combining of certain departments. See floor plans of " Scheme D," pp. 65-67. In a still smaller building, with a school capacity of one hundred, the minimum requirements are ten rooms, with a combining of certain departments. See floor plans of " Scheme E," page 68.

(For other illustrative plans, see Chapters VI to IX.)

SIZES OF ROOMS

The fundamental separation-principle, both for departments and classes, must obtain in any building for the educational work of the church, whatever differences of opinion may arise as to the number of departments and size of classes. If the classes are to be larger, as some advocate, then there would be fewer classrooms, but they will be real rooms, and there will be an allowance of nine square feet of floor-space for each student. If there is some teaching that ought to be done by the exceptionally skilful teacher with a large group, as some advise, this may be done with the whole department as a class in the assembly-room, whether on Sunday or in the week-day school. However, where this is done, it must be remembered that a large proportion of the handwork, memory work, and other phases of the teaching process can be conducted effectively only in the smaller classes in the smaller rooms.

EXTERIOR APPEARANCE

The large number of rooms advocated in this book will not, as some may think, keep the building from looking right when viewed from the outside. As a matter of fact, these rooms, if rightly proportioned and placed, will help to dignify the entire architectural composition, and will make it possible for the architect to express in the exterior the whole purpose for which the building exists. (See Chapter IX.)

No exteriors, or perspectives, are shown in this book in connection with the floor-plans in schemes A to H, for the reason that the whole matter of exterior design is so important that it cannot be treated satisfactorily in so brief a space, and must wait for consideration in a later volume.

FOR CLASS USE

1. Name five factors to be taken into consideration in the beginning of any planning for a church-building. What other factors should be considered?

2. How large should the main auditorium be as compared with other portions of the building? Why? Discussion.

3. In what way may the size of schoolrooms be determined? What are the average proportions? What local conditions may modify these proportions?

4. Why is it that the Intermediate Department is smaller than the Junior Department in some churches?

CHAPTER VI

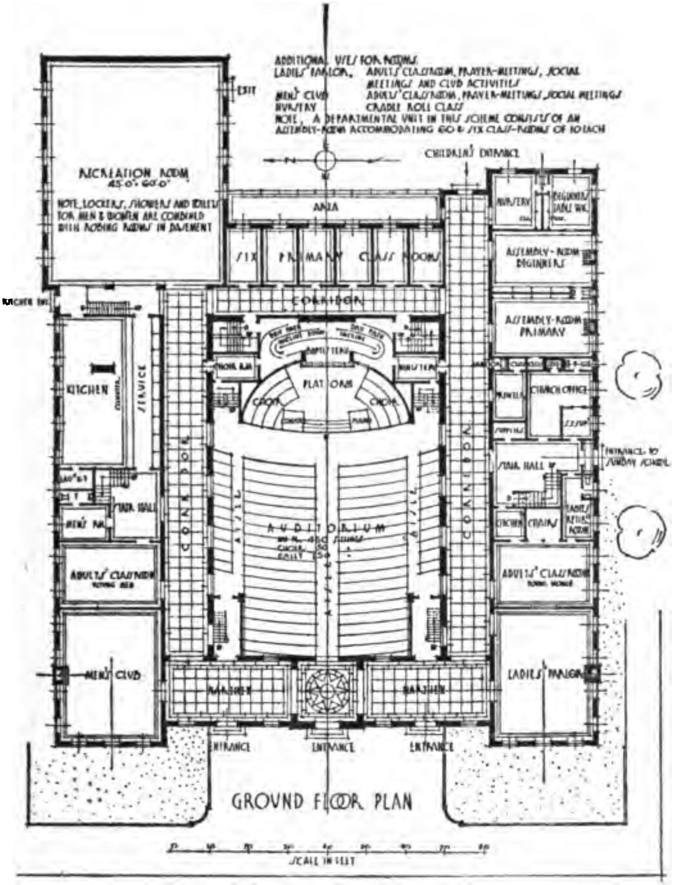
PLANNING FOR 400 TO 700 CAPACITY

In studying the floor-plans of this city church plant, shown in " Scheme A," you will note that we have in this building one concrete expression of the ideals presented in the preceding chapters and in the Standards of this book. Note the size and shape of the auditorium, with gallery, or balcony, on three sides, and with suitable platform, choir, organ, baptistry, and other provisions. In case a baptistry were not desired, the platform arrangements would be modified.

Note that there are forty schoolrooms, each completely separated from the others. The school portion of the building was planned to accommodate six hundred, but could easily care for seven hundred in case of expansion of the school. Note that there are office, library, retiring-rooms, club-rooms, recreation-room, kitchen, kitchenettes, etc. Note the splendid corridor provisions for circulation and the unification of the whole plan, with the main auditorium as the heart of the whole.

In " Scheme H," we have a very different problem, and a very different solution, but here again we find concrete expression of the fundamental principles set forth in the preceding chapters. In this particular case, there was a demand for an auditorium seating six hundred and for provision for a school of six hundred, in a given limited space.

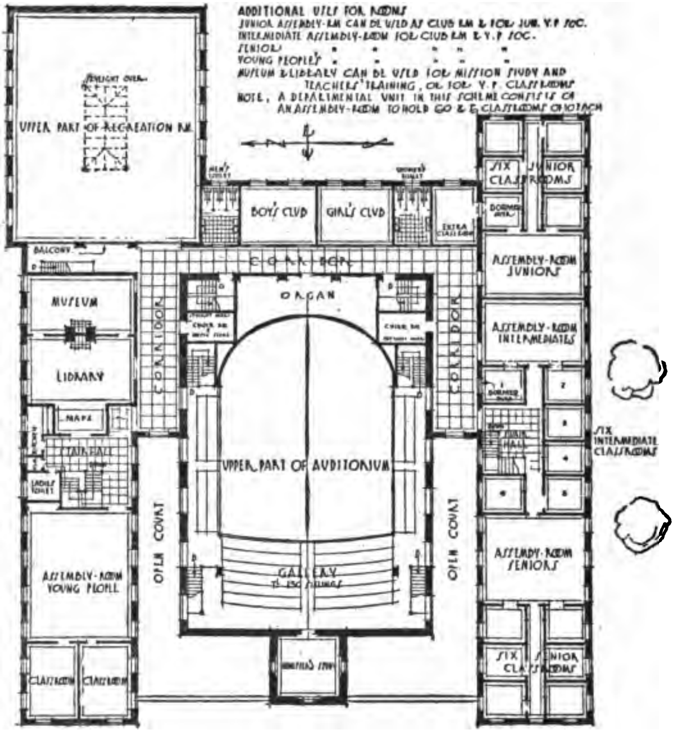
The limitations of space made impossible six class-



SCHEME. 'A'

A CHURCH AND CHURCH SCHOOL BUILDING. TO ACCOMMODATE 600 IN AUDITORIUM AND 600 IN CHURCH SCHOOL •

H.G.



ADDITIONAL USES FOR ROOMS
JUNIOR ASSEMBLY-RM CAN BE USED AS CLUB RM & FOR JUN. Y.P SOC.
INTERMEDIATE ASSEMBLY-ROOM FOR CLUB RM & Y.P SOC.
SENIORS " " " " "
YOUNG PEOPLES " " " " "
MUSEUM & LIBRARY CAN BE USED FOR MISSION STUDY AND TEACHERS' TRAINING, OR FOR Y.P. CLASSROOMS
NOTE, A DEPARTMENTAL UNIT IN THIS SCHEME CONSISTS OF AN ASSEMBLY-ROOM TO HOLD 60 & 6 CLASSROOMS OF 10 EACH

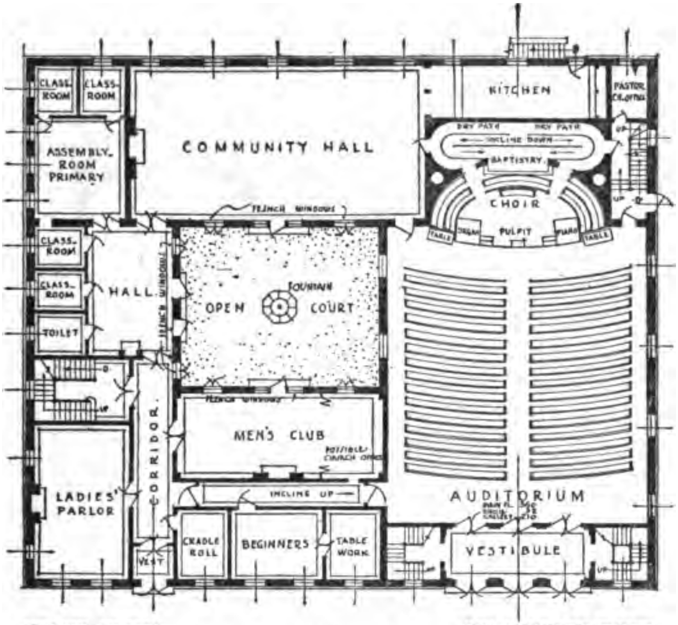
H.G.

SECOND FLOOR PLAN

SCALE IN FEET

SCHEME 'A'

A CHURCH AND CHURCH SCHOOL BUILDING TO ACCOMMODATE 600 IN AUDITORIUM AND 600 IN CHURCH SCHOOL



OTHER USES FOR ROOMS—
LADIES' PARLOR & MEN'S CLUB
ADULTS' CLASSROOM, PRAYERMEETINGS,
SOCIAL MEETINGS, & CLUB ACTIVITIES

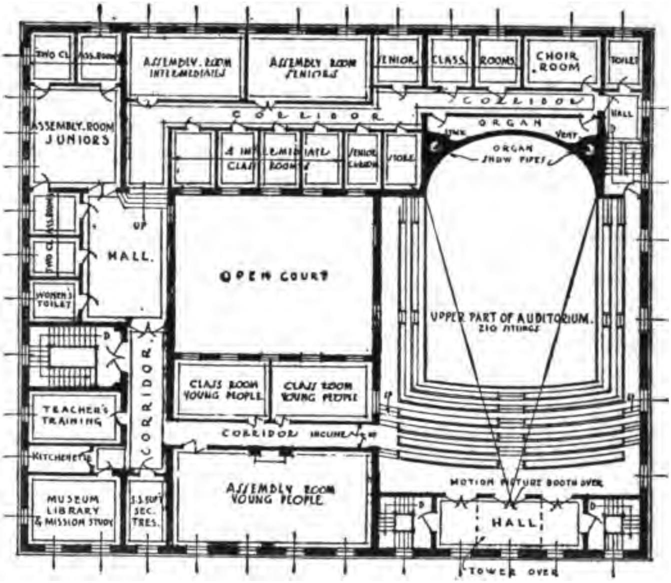
FIRST FLOOR PLAN

NOTE—A DEPARTMENTAL UNIT CONSISTS
OF AN ASSEMBLY-ROOM AND FOUR CLASS-
ROOMS—TWO CLASSES TO BE HELD IN
ASSEMBLY-ROOM

SCALE IN FEET

SCHEME 'H'

A CHURCH & CHURCH SCHOOL BUILDING TO ACCOMMODATE
600 IN THE AUDITORIUM & 600 IN THE CHURCH SCHOOL.



OTHER USES FOR ROOMS-
ASSEMBLY-RM. JUNIOR-S
CLUB ROOM, JUNIOR Y.P. SOCIETY
ASSEMBLY-RM. INT, SENIOR, & Y.P.
CLUB ROOM, Y.P. SOCIETY

SECOND FLOOR PLAN

0 5 10 15 20 25 30 35 40 45 50
SCALE IN FEET

NOTE_A DEPARTMENTAL UNIT CONSISTS
OF AN ASSEMBLY. ROOM AND FOUR CLASS_
ROOMS_TWO CLASSES TO BE HELD IN
ASSEMBLY_ROOM.

SCHEME "H"

A CHURCH & CHURCH SCHOOL BUILDING TO ACCOMMODATE
600 IN THE AUDITORIUM & 600 IN THE CHURCH SCHOOL.

rooms for each department, which is the standard ideal number for a school of this size, so four were provided instead, with the suggestion that two classes meet in each departmental assembly-room, or that there be fewer and larger classes. This building would care for a school of only four or five hundred a little more satisfactorily.

We have here an interesting solution of a city problem for a church with a corner lot that is inadequate in size.

It should be clearly understood that these two plans, in Schemes " A " and " H," are not presented as being usable for any churches other than the ones for which they were especially designed, even where these same capacities are desired. Each was carefully planned as the solution of a specific problem, to meet the requirements of a given church in a given community.

The procedure in planning is first to determine all the requirements. A questionnaire should be carefully drawn up and filled out from exact information. A careful survey of the community to be served by the church may be required. A building planned without knowledge of the uses to which it should be put in order adequately to serve its constituency, is no more than a guess. True planning starts with exact information as to needs. A department of architecture, serving in the capacity of consulting specialists, assists the church in arriving at the requirements, and with these in hand the department, together with the employed architect, can work out the drawings, thus giving the church the benefit of the research work which the department is continuously doing, plus the understanding by the local architect of the building-law requirements and other factors which must be taken into account. Having in mind from the beginning the general type of architectural treatment which will be used in the design, the architect will seek to give beautiful expression to the unified plan, in harmony with the location and surroundings.

The reader will note that no exterior views or elevations are shown in connection with schemes A and H, or in the chapters that follow. It is recognized that church committees and their architects will have their own ideals with regard to the architectural treatment of the building in each case. In a later volume, it is planned to present adequate discussion of the whole subject of church design and to show a number of views illustrative of the various types of architecture, making it possible for laymen, not trained in architecture, to understand the differences between a good design and a poor one.

FOR CLASS USE

1. Note the light-courts in each of the two schemes, "A" and "H." These always are necessary in compact planning, such as we have in both of these schemes.
2. Draw, in simple outline, floor-plans of your own conception for a church and church-school building to accommodate five hundred in the auditorium and five hundred in the schoolrooms.

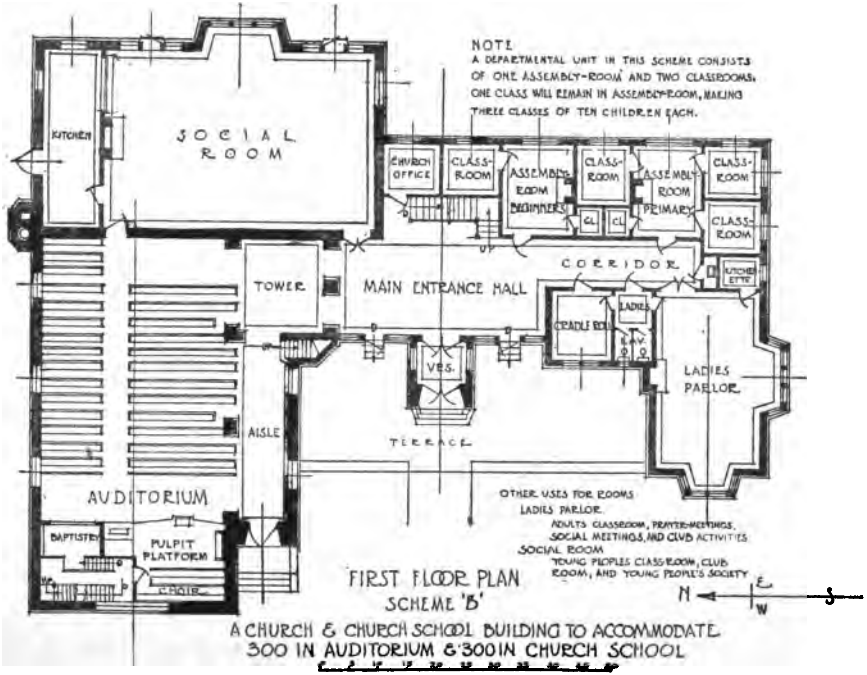
CHAPTER VII

PLANNING FOR 300 CAPACITY

In Schemes "B" and "C," we have, for the same capacities, two very different solutions of two very different problems, but in both we have practical and beautiful expression of the fundamental principles presented in the preceding chapters and in the Standards of this book. Both plans are demonstrations of the practicability of our best church-building ideals.

In neither case has beauty been sacrificed, but on the other hand the intelligent planning for the proper housing of a modern church program has made possible a more pleasing architectural effect. Nor have the school provisions, with adequate separation of department from departments and of class from classes, increased the cost of construction in either building, as compared with the old type of building with inadequate, movable-partition separation, but in both cases there has been effected an actual saving of money.

In "Scheme B," we have the solution of a suburban problem, where there is plenty of lot-space, and, in "Scheme C," we have the solution of a small-town problem, where the lot-space is limited. In each case there is adequate provision for the seating of three hundred in the main auditorium and for a departmentalized, closely graded school of three hundred, with possibility of expansion to four hundred. Note, too, the provisions for the social and recreational features and the circulation and

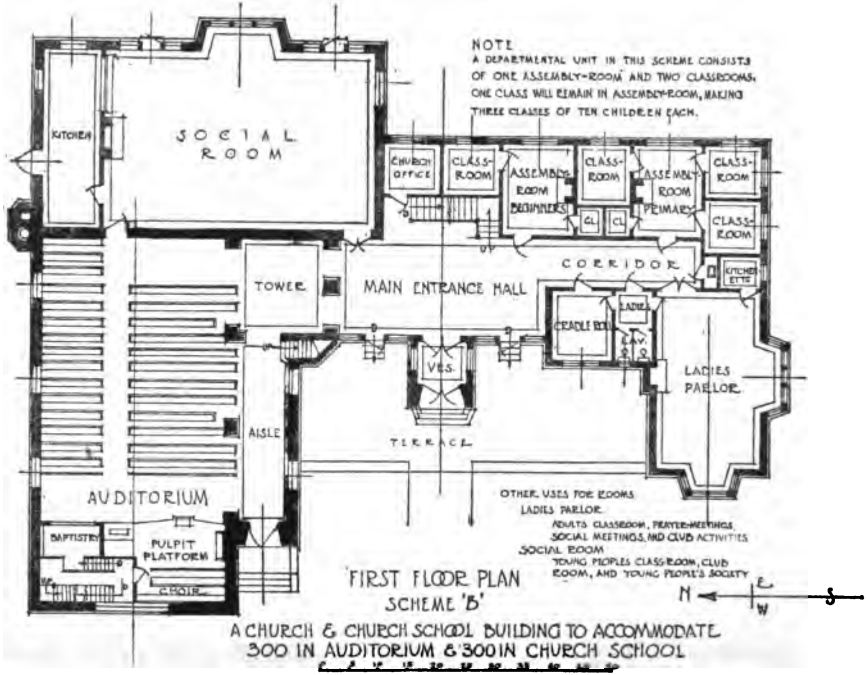


NOTE
A DEPARTMENTAL UNIT IN THIS SCHEME CONSISTS OF ONE ASSEMBLY-ROOM AND TWO CLASSROOMS. ONE CLASS WILL REMAIN IN ASSEMBLY-ROOM, MAKING THREE CLASSES OF TEN CHILDREN EACH.

OTHER USES FOR ROOMS
LADIES PARLOR
ADULTS CLASSROOM, PRAYER-MEETINGS, SOCIAL MEETINGS, AND CLUB ACTIVITIES
SOCIAL ROOM
YOUNG PEOPLES CLASSROOM, CLUB ROOM, AND YOUNG PEOPLE'S SOCIETY

FIRST FLOOR PLAN
SCHEME 'B'

A CHURCH & CHURCH SCHOOL BUILDING TO ACCOMMODATE
300 IN AUDITORIUM & 300 IN CHURCH SCHOOL

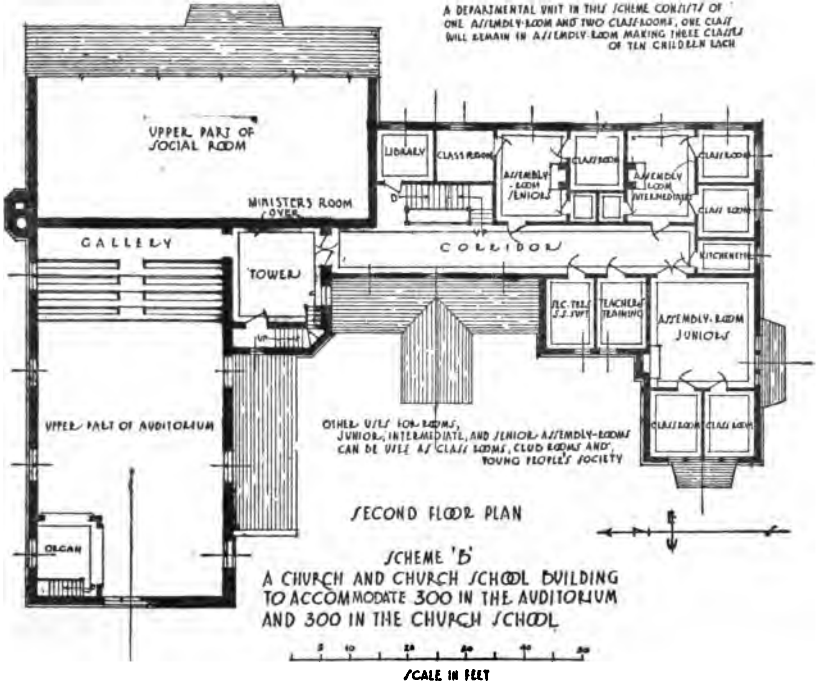


NOTE
A DEPARTMENTAL UNIT IN THIS SCHEME CONSISTS OF ONE ASSEMBLY-ROOM AND TWO CLASSROOMS. ONE CLASS WILL REMAIN IN ASSEMBLY-ROOM, MAKING THREE CLASSES OF TEN CHILDREN EACH.

OTHER USES FOR ROOMS
LADIES PARLOR
ADULTS CLASSROOM, PRAYER-MEETINGS, SOCIAL MEETINGS, AND CLUB ACTIVITIES
SOCIAL ROOM
YOUNG PEOPLES CLASS-ROOM, CLUB ROOM, AND YOUNG PEOPLE'S SOCIETY

FIRST FLOOR PLAN
SCHEME 'B'

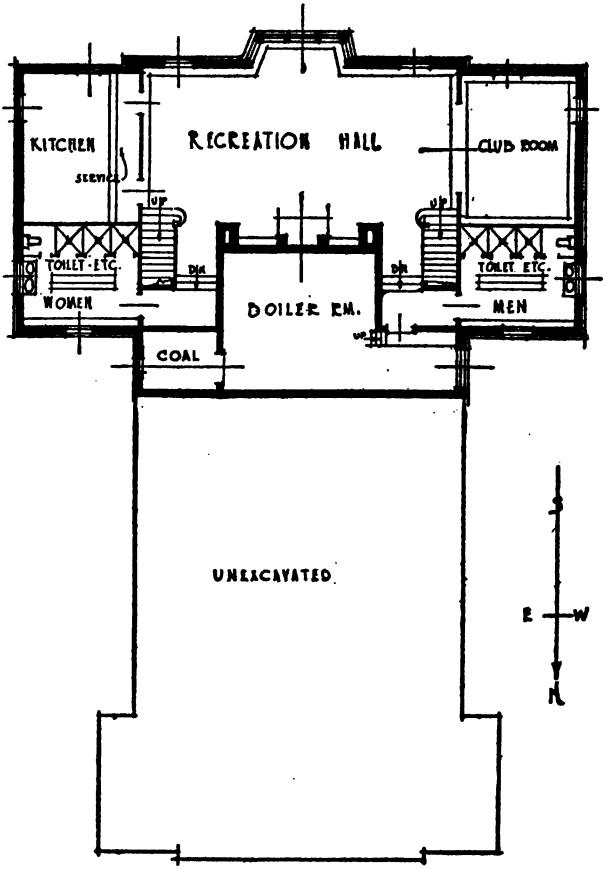
A CHURCH & CHURCH SCHOOL BUILDING TO ACCOMMODATE 300 IN AUDITORIUM & 300 IN CHURCH SCHOOL



SECOND FLOOR PLAN

SCHEME 'B'
A CHURCH AND CHURCH SCHOOL BUILDING
TO ACCOMMODATE 300 IN THE AUDITORIUM
AND 300 IN THE CHURCH SCHOOL

A DEPARTMENTAL UNIT IN THIS SCHEME CONSISTS OF ONE ASSEMBLY-ROOM AND TWO CLASS-ROOMS, ONE CLASS WILL REMAIN IN ASSEMBLY-ROOM MAKING THREE CLASSES OF TEN CHILDREN EACH
UPPER PART OF SOCIAL ROOM
MINISTERS ROOM OVER
LIBRARY
CLASS ROOM
ASSEMBLY-ROOM SENIORS
CLASS ROOM
ASSEMBLY ROOM INTERMEDIATES
CLASS ROOM
CLASS ROOM
KITCHENETTE
D
UP
CORRIDOR
GALLERY
TOWER
UP
SEC-TREAS S.S.SUPT
TEACHERS TRAINING
ASSEMBLY-ROOM JUNIORS
CLASS ROOM
CLASS ROOM
UPPER PART OF AUDITORIUM
ORGAN
OTHER USES FOR ROOMS, JUNIOR, INTERMEDIATE, AND SENIOR ASSEMBLY-ROOMS CAN BE USED AS CLASS ROOMS, CLUB ROOMS AND YOUNG PEOPLE'S SOCIETY
5
10
20
30
40
50
SCALE IN FEET



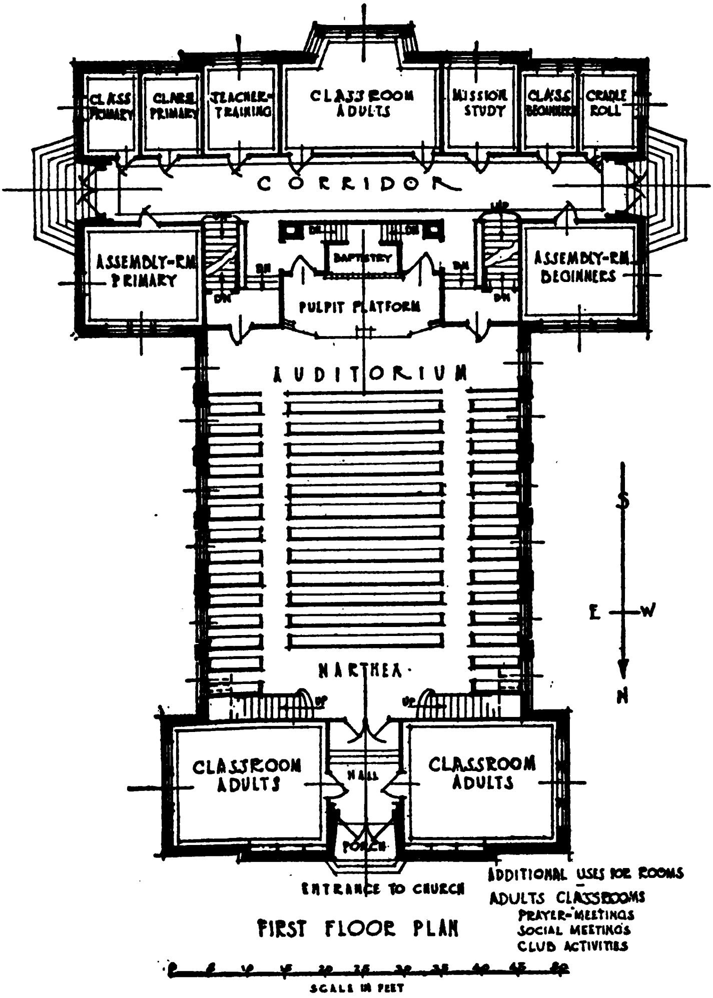
BASEMENT. PLAN

0 5 10 15 20 25 30 35 40 45 50

SCALE IN FEET

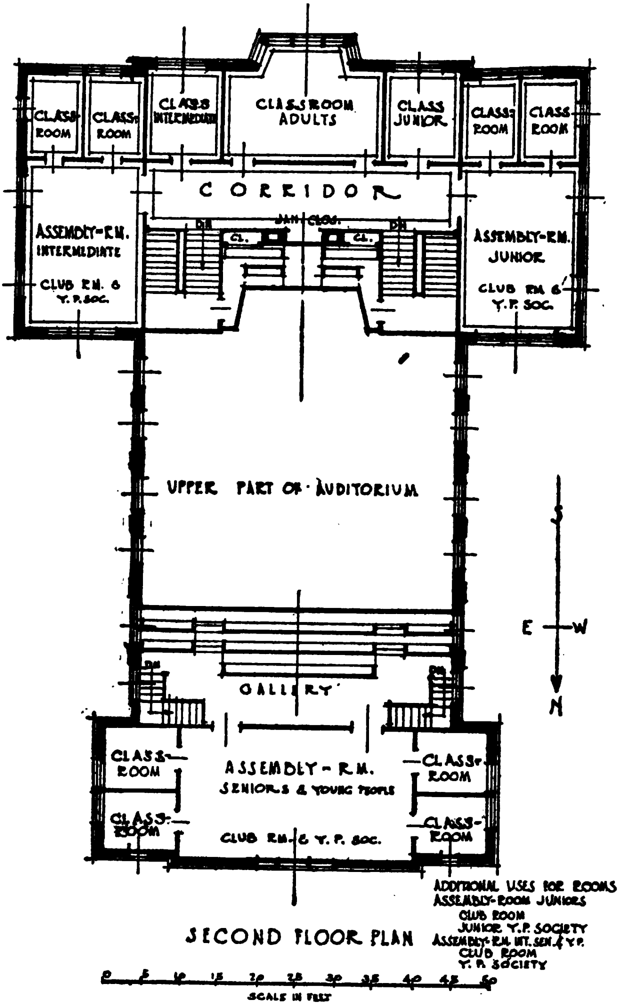
SCHEME 'C'

A CHURCH & CHURCH SCHOOL BUILDING TO ACCOMMODATE
300 IN THE AUDITORIUM & 300 IN THE CHURCH SCHOOL



SCHEME 'C'

A CHURCH & CHURCH SCHOOL BUILDING TO ACCOMMODATE 300 IN THE AUDITORIUM & 300 IN THE CHURCH SCHOOL



SECOND FLOOR PLAN

ADDITIONAL USES FOR ROOMS
ASSEMBLY-ROOM JUNIORS
CLUB ROOM
JUNIOR Y.P. SOCIETY
ASSEMBLY-RM. INT. SEN. & Y.P.
CLUB ROOM
Y. P. SOCIETY

SCHEME 'C'

A CHURCH & CHURCH SCHOOL BUILDING TO ACCOMMODATE
300 IN THE AUDITORIUM & 300 IN THE CHURCH SCHOOL

communication accommodations. In " Scheme B," the basement uses are limited to boiler, coal, and toilets. In " Scheme C," the recreation-room, kitchen, and club-room also are in the basement, because of lack of lot-space. As a rule, basement uses should be reduced to the minimum, and usually limited to boiler, coal, baptismal dressing-rooms, and toilets, both from the standpoint of utility and of economy.

It should be clearly understood that these two plans, in Schemes " B " and " C," are presented solely for their educational value, and not as " stock plans," which may be used for any churches where these same capacities are desired. These two plans are the solutions of two specific problems, to meet the particular requirements of two given churches in given communities.

FOR CLASS USE

1. Note how widely and completely separated are the different portions of the building shown in " Scheme B " and at the same time how closely they are tied together.
2. Note that, in building, any one of the three main portions of the building as shown in " Scheme B " could be built by itself first and the other portions built later, in case of limited funds.
3. Note how economical is the planning as shown in " Scheme C." Such a plan provides the maximum of accommodations at a minimum of cost.
4. Draw, in simple outline, floor-plans of your own conception for a church and church-school building to accommodate two hundred in each.

CHAPTER VIII

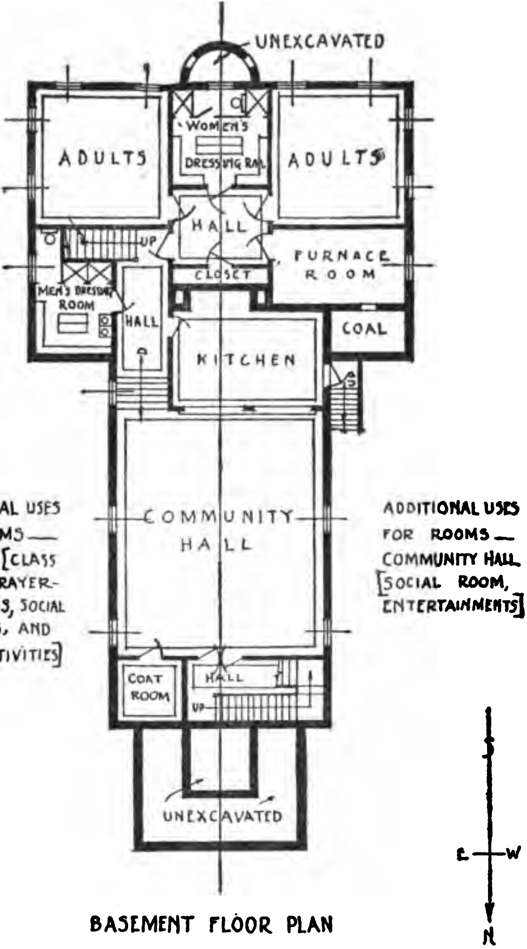
PLANNING FOR 100 TO 200 CAPACITY

In " Scheme D," we have a pleasing and economical solution of a small-church problem. The principal entrance, with its wide pillared portico, surmounted by a tower and open belfry, suggests the superb architecture of Colonial days. The church school is pleasingly combined with the main auditorium in a single unit of composition.

The main auditorium is planned for the comfortable seating of one hundred fifty, and the school portion will care for the same number, with a possibility of expansion to two hundred. In this plan, there are not so many schoolrooms as in a larger building, but at the same time there are a sufficient number to make possible that degree of separation which is essential to good school-work in a school of this size.

Let it be said here, for the sake of emphasis, as we have said in other chapters, that this elimination of movable partitions, with provision for complete schoolrooms, with sound-proof partitions and solid doors, does not make the building cost more, but instead effects an actual saving in cost of construction.

The cubic contents of this building and the cost of construction are less than in Akron-plan construction, for the reason that the necessarily high ceiling of the Akron assembly-room and the consequent waste space are eliminated and their excessive cost saved.



ADDITIONAL USES FOR ROOMS—
ADULTS [CLASS ROOM, PRAYER-MEETINGS, SOCIAL MEETINGS, AND CLUB ACTIVITIES]

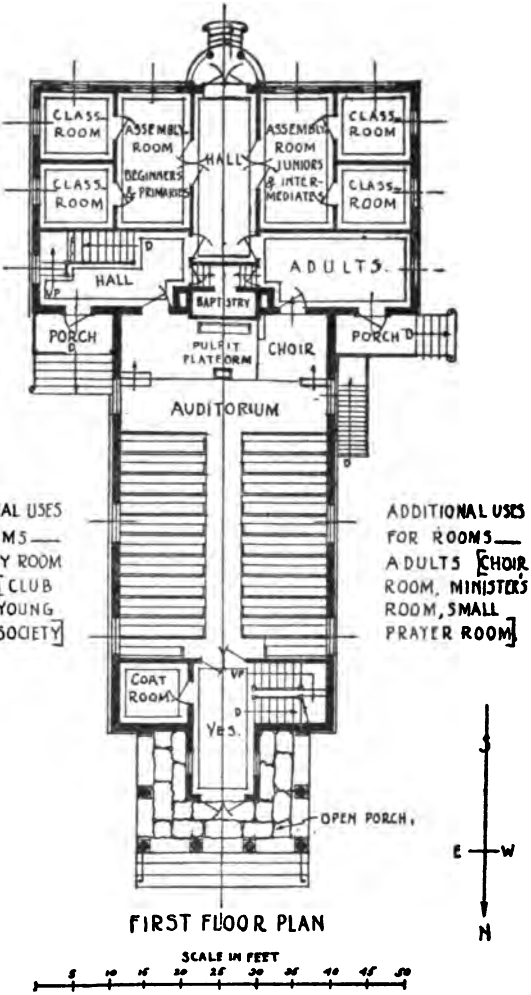
ADDITIONAL USES FOR ROOMS—
COMMUNITY HALL [SOCIAL ROOM, ENTERTAINMENTS]

BASEMENT FLOOR PLAN

SCALE IN FEET
5 10 15 20 25 30 35 40 45 50

SCHEME 'D'

A CHURCH AND CHURCH SCHOOL BUILDING TO ACCOMMODATE
▲ 150 IN AUDITORIUM AND 150 IN CHURCH SCHOOL ▲



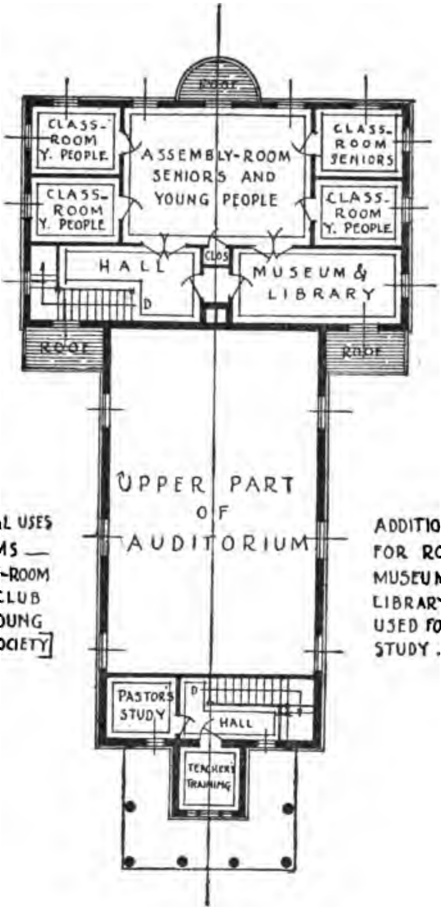
ADDITIONAL USES
FOR ROOMS—
ASSEMBLY ROOM
JUNIORS [CLUB
ROOM & YOUNG
PEOPLE'S SOCIETY]

ADDITIONAL USES
FOR ROOMS—
ADULTS [CHOIR
ROOM, MINISTER'S
ROOM, SMALL
PRAYER ROOM]

FIRST FLOOR PLAN

SCHEME 'D'

A CHURCH AND CHURCH SCHOOL BUILDING TO ACCOMMODATE
150 IN AUDITORIUM AND 150 IN CHURCH SCHOOL



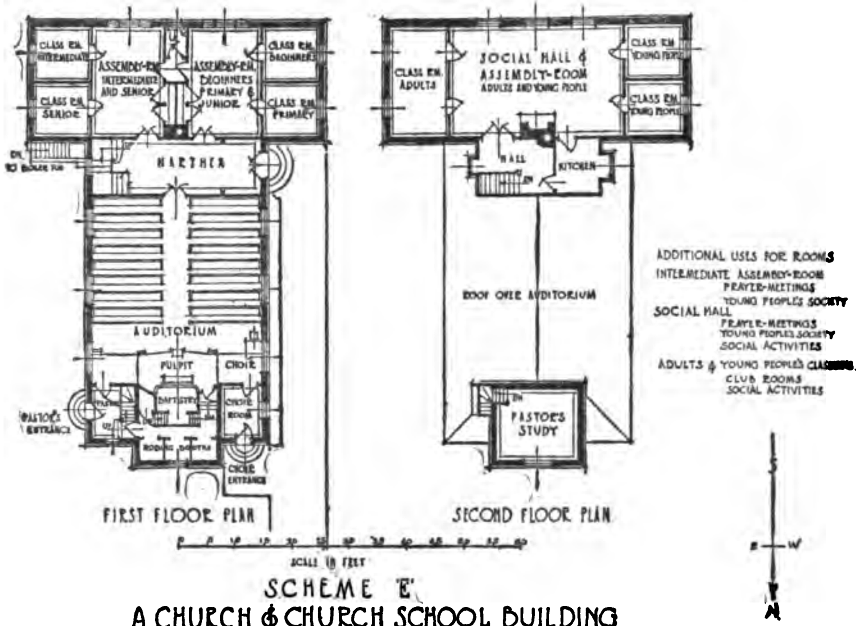
ADDITIONAL USES FOR ROOMS — ASSEMBLY-ROOM SENIORS [CLUB ROOM & YOUNG PEOPLES SOCIETY]

ADDITIONAL USES FOR ROOMS — MUSEUM AND LIBRARY TO BE USED FOR MISSION STUDY.

SECOND FLOOR PLAN

SCHEME 'D'

A CHURCH AND CHURCH SCHOOL BUILDING TO ACCOMMODATE
150 IN AUDITORIUM AND 150 IN CHURCH SCHOOL



ADDITIONAL USES FOR ROOMS
INTERMEDIATE ASSEMBLY-ROOM
PRAYER-MEETINGS
YOUNG PEOPLES SOCIETY
SOCIAL HALL
PRAYER-MEETINGS
YOUNG PEOPLES SOCIETY
SOCIAL ACTIVITIES
ADULTS & YOUNG PEOPLE'S CLASSES.
CLUB ROOMS
SOCIAL ACTIVITIES

SCHEME 'E'
A CHURCH & CHURCH SCHOOL BUILDING
TO ACCOMMODATE 100 IN AUDITORIUM & 100 IN CHURCH SCHOOL

In "Scheme E," we have a pleasing and economical solution of a problem for a still smaller church, in a rural community.

These two small plans constitute a complete refutation of the mistaken idea held by many to the effect that a small church cannot provide schoolrooms for departmental and class separation, and that its building cannot be beautiful. Even the smallest church-building need not look like a garage or store-building. It costs no more to have a church-building that is appropriately beautiful than to have one that is insistently ugly. The smallest church may set up a modern program, and build accordingly, at the smallest cost, with the specialized architectural and educational assistance now available.

FOR CLASS USE

1. Note that in both schemes shown in this chapter, "D" and "E," that the maximum of accommodations is provided at a minimum of cost.

2. Note the complete separation of room from rooms, by means of sound-proof partitions and solid doors. Think how much more quiet and reverence are possible in a building of the type shown in these two schemes as compared with the small church-building which we find usually in the average rural community.

3. Draw, in simple outline, floor-plans of your own conception for a church and church-school building to accommodate one hundred twenty-five in the auditorium and one hundred twenty-five in the schoolrooms.

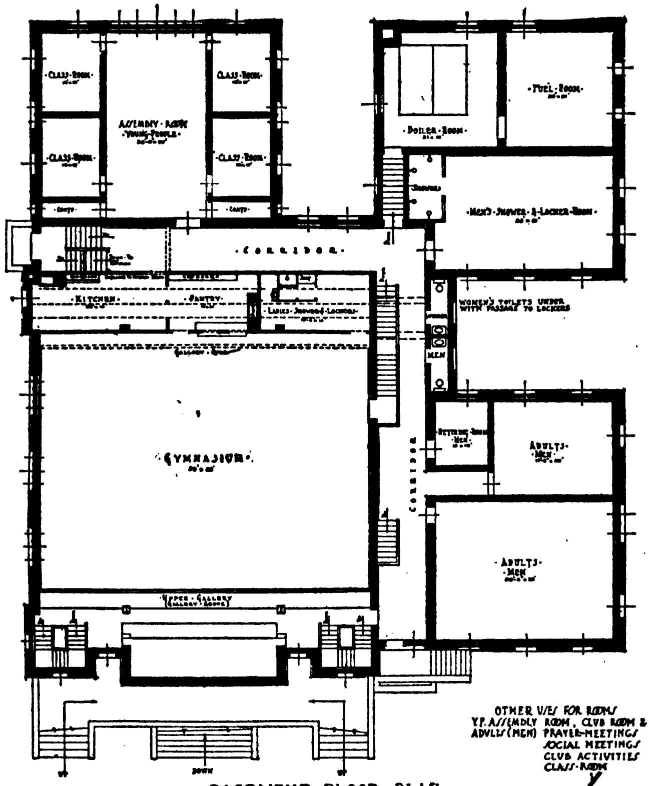
CHAPTER IX

PLANNING FOR 800 TO 1,200 CAPACITY

In " Scheme G," we have a decidedly modern building, planned for a restricted down-town lot, in a young, central-West city. In design it has slight Gothic tendencies. It is unusually compact, and the absence of any pronounced architectural features, such as a tower or a high roof, appeals to a congregation of limited means, and is quite suitable for the location, where any special architectural features would be in hopeless competition with other structures.

In studying the floor-plans of this scheme, it will be noted that there are three separate educational units on each of the three floors, making provision for a Sunday school, or church school, which is large in proportion to the membership of the church. The educational portions will care adequately for eight hundred, and would care for an expansion of two or three hundred more. The Junior departmental unit, for instance, will seat eighty or more in the assembly-room, and ten or more in each of the eight classrooms. Note, also, in this plan, the large gymnasium, with its large galleries. Note, too, the other provisions in harmony with the ideals presented in the preceding chapters and in the Standards of this book.

In " Scheme F," we have a building which was planned for twelve hundred capacity, with possibility of expansion in the educational portions to care for a total of fifteen hundred. In case a church already has an audi-



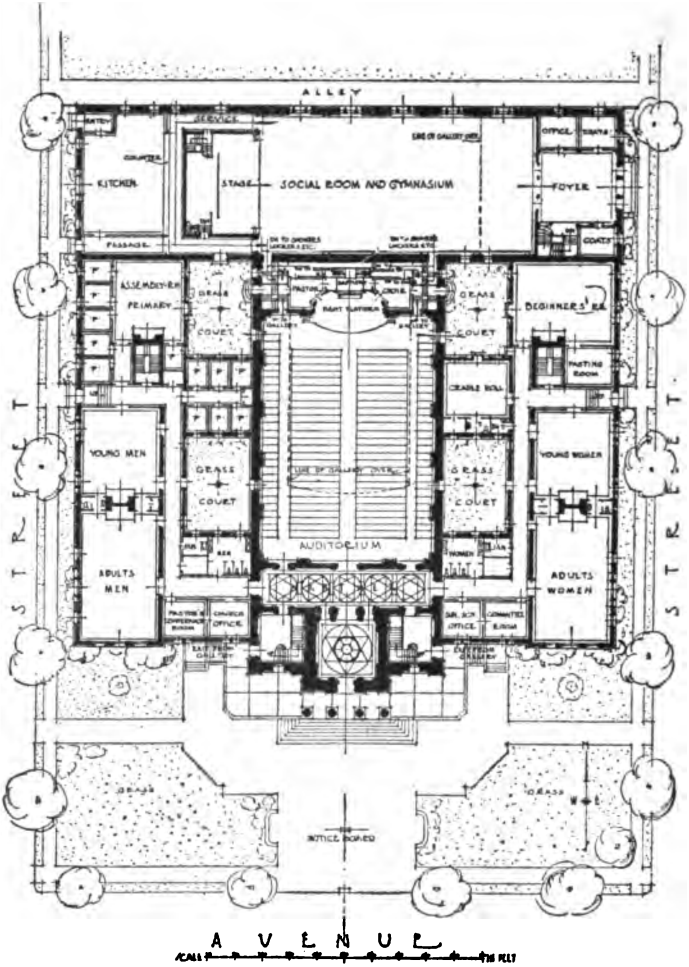
OTHER USES FOR ROOMS
Y.P. ASSEMBLY ROOM, CLUB ROOM & Y.P. SOC
ADULTS (MEN) PRAYER-MEETINGS
SOCIAL MEETINGS
CLUB ACTIVITIES
CLASS-ROOM

· BASEMENT FLOOR PLAN ·

SCALE IN FEET

SCHEME "G"

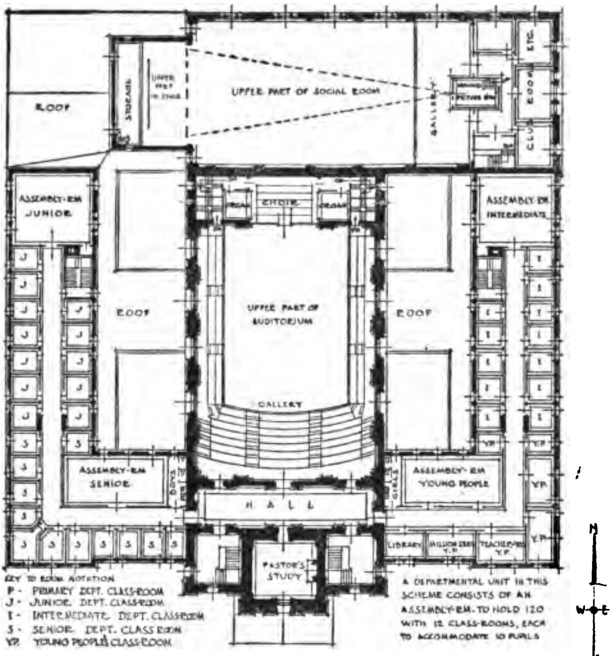
· A CHURCH AND CHURCH SCHOOL BUILDING TO ACCOMMODATE ·
· 800 IN THE CHURCH AUDITORIUM AND 800 IN THE CHURCH SCHOOL ·



GROUND FLOOR PLAN

A CHURCH AND CHURCH SCHOOL BUILDING TO ACCOMMODATE 1200 IN THE CHURCH AUDITORIUM AND 1200 IN THE CHURCH SCHOOL

SCHEME 'F'



KEY TO ROOM NOTATION
P - PRIMARY DEPT. CLASS-ROOM
J - JUNIOR DEPT. CLASS-ROOM
I - INTERMEDIATE DEPT. CLASS-ROOM
S - SENIOR DEPT. CLASS ROOM
YP. YOUNG PEOPLE'S CLASS-ROOM

A DEPARTMENTAL UNIT IN THIS SCHEME CONSISTS OF AN ASSEMBLY-RM. TO HOLD 120 WITH 12 CLASS-ROOMS, EACH TO ACCOMMODATE 10 PUPILS

· SECOND · FLOOR PLAN ·

A CHURCH AND CHURCH SCHOOL BUILDING TO ACCOMMODATE
1200 IN THE CHURCH AUDITORIUM AND 1200 IN THE CHURCH SCHOOL
SCHEME 'F'

SCALE IN FEET

torium that is adequate, it may be possible to add the educational portions, following in the main the general plan as here shown.

FOR CLASS USE

1. What do you like best about the plan as shown in "Scheme G"? Why? Could you suggest any improvements?
2. Note how completely each educational unit is separated from the main auditorium, and at the same time how all are tied together by corridor connections.
3. Note, in "Scheme G," that the large gymnasium could be utilized also as a dining-room and for entertainments.
4. Note, in "Scheme F," that the classrooms are separated from the departmental assembly-rooms, and at the same time are conveniently near.
5. Suggest possible improvements in the floor-plans of "Scheme F."

CHAPTER X

THE ARCHITECT AS ARTIST

By Joseph Hudnut, A. I. A.

It so happens that men, being unable to live on bread alone, are always dissatisfied with buildings that are merely well-planned and well-constructed.

They are seldom willing to let their churches assume entirely that shape which usefulness or convenience or good construction might give them; but they universally demand that a church shall possess, besides these practical qualities, some attributes of beauty.

Therefore they turn to the artist, asking him to reshape to some measure of harmony the ungainly walls and rooms and roofs which usefulness alone might impose upon a building; to introduce some order among the numerous doors and windows, columns and arches; to work out some pleasant relationship among the many rooms, each designed for a different purpose; to soften or cover over the harsh structural forms which the progress of the building science is constantly developing; and to adorn with some touches of grace the bare surfaces of walls and ceilings and roofs.

Therefore a designer of buildings, an architect, must be, besides a planner and a builder, an artist. He must have some genuine enthusiasm and love for beauty in buildings. He must possess, in that particular field, a superior taste and judgment. He must know something of the technique, the rules and formulæ—if there are rules and formulæ—by which beauty may be achieved.

In this chapter, I am thinking of the architect in this phase of his activity: his work as an artist.

THE PREJUDICE AGAINST UTILITY

Now, there are many architects who, in their enthusiasm for loveliness, in their eagerness to express in stone and steel some of the beauty and significance of life, forget that they have any other function.

They look upon the building of a church, in particular, as little else than an opportunity for the creation of beauty: planning and construction are merely the means by which beauty may be realized.

For these architects a church exists not so much for the service it may render mankind as for the sensual pleasure or spiritual quickening it may give the beholder: it is a kind of *monument,* a thing to be arranged and shaped with a view to its impressiveness rather than to its use.

Absorbed in the fine study of form and proportion, sensitive above others to that direct appeal which architecture makes to the eyes—and to the heart—of man, they sometimes become quite willing to sacrifice in whole or in part the usefulness and efficiency of a church-building if by doing so they may increase its beauty.

Such architects are apt to be hostile to developments in plan and structure such as are advocated by Doctor Tralle in this book, for they believe that such developments will impose so many practical restrictions as to leave little room for that free modeling of spaces and masses upon which proportion, the basis of architectural beauty, depends.

They feel that a practical thing—a thing that is to be used—can never be made as beautiful as a thing that is shaped without regard for any useful properties, and they like to think of a church as not so much a useful building as a piece of decorative and impressive construction.

MONUMENTAL CHURCH BUILDINGS

The great churches of the past appeal to us almost always in this monumental aspect. The vast domes and basilicas of the Christian emperors of Rome and Byzantium, the mystic, sumptuous cathedrals of the Gothic centuries, the reasoned powerful designs of Michelangelo and Mansart and Wren—these are to us less churches than monuments.

We forget that they were ever meant to be used. They seem to have been created solely for their splendor of form and decoration or for that expression of awe and mystery and aspiration which we read into them.

That is perhaps one reason why we come to regard architecture as wholly a monumental art. That is why we say, seeing that men now build in a different spirit, that architecture is a " dead " art. We do not understand the intricate uses for which these older buildings were designed and so we think they were designed entirely, or at least in large degree, with the single desire for beauty and impressiveness.

Believing this, it is quite natural that we should want to build upon a similar principle, and it is easy to understand why architects, who, more than others, comprehend and appreciate this ancient and moving beauty, should resist any development in church uses or even any changes in the character of the Christian service, if they thought that development and change would make impossible the creation of modern churches based in their design upon the Roman or the Gothic or the Italian model; and I think we can forgive them if, in their enthusiasm, they constantly search for, or even invent, theories and doctrines that will justify this very natural conservatism.

PROTESTANT ARCHITECTURAL CONFLICT

We can understand therefore why there has come about, in the Protestant churches, a kind of conflict, suppressed and little talked about, yet unmistakable, between the artist, striving for beauty, and the administrator, striving for efficiency.

Quite unconsciously oftentimes, the artist has hoped to arrest that development of the Church for which the administrator and the teacher are working. He would deny in the new structures a place for these facilities for teaching, forbid the Church from providing for this wider social service, on the plea that these things will revolutionize the character of the building so that it will no longer permit the reproduction of that stately and solemn beauty, which he, by reason of his studies and habits of mind, is especially competent to create.

If you build these innumerable classrooms, libraries, assembly-rooms, kindergartens, with their wide windows and low ceilings—if you shape this auditorium so that it is scientifically adapted for speaking and for music, admitting freely the sunshine and the air, removing all piers and columns that might come between the speaker and his audience—if you include these social rooms, these parlors, offices, clubs, gymnasia—then you destroy the character and expressiveness of the building. You cannot then make it "appropriate" or "churchly" or "serious"; it will be "in bad taste."

And by these phrases they mean not merely that the church-building will differ, perhaps radically, from the great churches of the past, but they mean to express also their fear that the church will lose that monumental beauty, that spiritual and historic quality, which it might otherwise attain.

Perhaps this conflict, of which so few of us are conscious, is the real cause of the lamentable ugliness of so many of our modern churches. Administrators and teachers, misinterpreting the artist's love for the "old and obsolete," fall easy victims to that class of so-called architects (alas, how prolific!) who "give the public what it wants" and to that end are ready to sacrifice anything whatever—except, perhaps, their fees. Artists, finding themselves limited in opportunities, their motives misunderstood, their talents unappreciated, turn to other fields of architecture—or starve.

CONFLICT NOT NECESSARY

Being an architect, I cannot fail to sympathize with the artist's point of view; and I think that they are right in striving, in every practicable way, not merely to revive and recreate the ancient architectural forms and to make use of them in modern buildings, but also to restore architecture to its rightful place as a monumental and expressive art.

I think it inevitable and right that the architect should look for inspiration in that vast treasury of art-forms which the stream of history has brought to his feet, and I think it right that he should demand in modern buildings the same degree of freedom in the control of proportion and details that was accorded the architects of the past.

To me the architect, no less than the preacher, is a minister—and as badly needed in our religion. Like music and oratory, his art is addressed to the heart no less than to the senses; and I think that the religious leaders of this country—and in particular the leaders of the Protestant churches—are much to blame because they have failed to appreciate the true intentions and the true value of the artist, to recognize him, not as an adversary, nor yet as a servant, but as a coworker and friend.

Yet I believe that the architect, by trying too often to impose an historic form upon a modern building at the expense of its efficiency, by building a monument when what was wanted was a useful structure, has frequently invited this misunderstanding and is in part to blame for it. Too many of us have, I think, this wrong idea as to the nature of architectural beauty, of the function of the architect in the building of a church.

Surely it is for the leaders of religious thought, and not for the architect, to say whether or not the modern church is primarily a monument or a useful building—or, if, indeed, it may not be both. If it is a useful building, then the art of church building is, necessarily, less a monumental art than it is an applied art: an art *applied* to a useful thing; and though the church could, and often should, possess a monumental beauty, yet that beauty, like every other architectural quality, ought to be attained by giving proportion and decorative development to masses and spaces (walls, roofs, piers, rooms, galleries) which are in themselves *necessary*.

ARCHITECTURE AN OUTGROWTH OF UTILITY

This would be true even though, until now, the art of church building had developed upon different principles. But, as a matter of fact, that art has never been, except for a brief period in the sixteenth century, a purely monumental art. *Churches have always been useful buildings,* their plans and interiors and outward aspects largely determined by practical conditions of use and construction.

It was precisely because the forms of Christian service and of Christian work changed from time to time that the architectural treatment of the church building changed: it had to be adapted to the changing conditions of use.

It was that necessity, more than changes in taste or in architectural knowledge, that gave rise to the many "styles" in which churches have been built. In every case some new requirement of ceremony or other Christian activity, some new emphasis in teaching, some new development in the relation between Church and Society, between Church and State, underlay the change in architectural fashion.

This is true, for example, of the great cathedrals of

Amiens and Rheims and Paris. Their consummate sensual beauty of detail and proportion, no less than the profound feeling which they manifest of " awe and mystery before unaccountable life "—these were instilled into the fabric of the cathedral in spite of the fact that every pier and every vault responds to some actual physical necessity.

These mighty harmonies of line and color and mass, overtones perhaps of a deeper spiritual harmony, are nevertheless derived directly out of a plan and a structural system which was made necessary by the changing forms of the Christian ritual and the wider social and educational service which the Church was then undertaking.

EVOLUTION IN ARCHITECTURE

For the Church of that day, as in our own, was undergoing a profound mutation both in its outlook and in the kind of service it hoped to render mankind. No longer exclusively monastic, it was becoming communal and civic, opening its portals to the populace for the first time in history.

It had undertaken once more the religious education of the people, addressing itself once again to their social and political welfare. Therefore a newer type of temple was demanded; and the architect, daring to accept frankly the new conditions of use, adopting boldly the newer awkward forms of construction developed by the engineers of that period, turning his back upon the splendid Roman model which until then he had struggled to recreate, evolved in a single century a new architecture, nobler than any the world had hitherto known.

Almost every line of that architecture is determined by some requirement of usefulness or strength. The plan—cruciform with nave and aisles and innumerable chapels—is worked out so as to be perfectly adapted to the splendid and dramatic ceremony of that day; its ritual, processions, festivals, its veneration of saints and relics. The decoration—that vast populace of chiseled and glass-painted figures, truly a " Bible in stone "—existed in order that the people might be taught, by means of symbol and illustration, the truths of Christianity, as the men of that day saw the truth.

The structural forms, made tolerable to the eye with pinnacle or molding or refinement of line; the fire-proofing; the lighting—these were the latest and best adapted to the purpose in hand. The church, beautiful, monumental, expressive, was yet perfectly adapted for its peculiar work.

We, too, have a Church which is developing a newer form of Christian service—the pulpit and the open Bible replacing the altar with its candles and ministering priests. We, too, are working out newer educational methods; we, too, are reaching out into wider fields of social usefulness. We, too, have new methods of construction, of fire-proofing, of lighting, and acoustics. Has not our Church, as well as the Church of the thirteenth century, a right to ask for a structure which will respond to these practical requirements and yet be beautiful?

Imagine what the men of Amiens would have done had they possessed, for example, so glorious a resource as steel construction! To what magnificent heights they would have raised their mighty naves, their spired towers! With what miracles of sculptured pinnacle and traceried gable they would have covered the naked bones of these gaunt skeletons! But we—we leave that fine opportunity for the exploitation of Business.

MODERN CHURCH ARCHITECTURE

I fear that we leave to Business, and to the State, and to private individuals, the exploitation of the most vitalizing principles of architectural design. Only in these fields, where practical requirements, not monumental precedents, are the basis of design, has some progress in architecture been possible.

Take, for example, a schoolhouse. Is it conceivable that the school authorities would refuse to carry out their advanced ideas in respect to school organization and administration and hygiene for fear that these will mar the beauty of the building? No; the architect must search for and find some means of meeting these requirements in a beautiful way.

And this is so, in equal degree, with library-buildings, office-buildings, country-houses, hotels, buildings for the governments. The romantic beauty of the Woolworth Building is achieved without the slightest impairment of its efficiency as a commercial structure; the decorative grace of the New York Public Library is attained without the slightest injury to its organization upon the most modern principles of library management.

This is the spirit in which American architecture is advancing, reaching every year a higher and higher level of beautiful achievement. Is there any real reason why the church should stand aside from this stream of progress—the church which, until now, has led and controlled the development of the art of architecture?

I believe that it is our business as architects to study and to understand, first of all, the trend of Christian thought in our country, to learn the needs of the new Church, its spirit and aims; and then, forgetting for the moment the churches of the past, we should try to work out a practical economic plan for a church-building suited to the new conditions. After that, we should think of some way of making that building beautiful and expressive, turning for guidance and inspiration to all the great architectures of the past—just as the men of Amiens turned to the Byzantine manuscripts, the Roman ruins, to Palestine and to Syria, and to the ruder architecture evolved from the Teuton forests. Good taste, restraint, significance, are just as possible for us as for them.

However primitive and experimental the first results of this method of work may be, they will at least be free (I hope) from affectation and artificiality—those two most grievous sins of modern architecture. We can expect, at least, a simplicity and a directness which shall be in harmony with the thought and temper of present-day Christianity: our bright outward shell shall grow out of and so express the native inward spirit. If that spirit is exalted and sincere it will surely achieve, in time, an expression that is beautiful.

FOR CLASS USE

1. Give five reasons why the church-building should be beautiful, both inside and outside.
2. Why do some architects fail to consider utility?

3. Show that the great church-buildings of the past were not mere monuments.

4. Why is there sometimes conflict between the architect and the administrator in our non-Catholic churches?

5. Is there any necessary conflict between beauty and utility in planning a modern church-building? Why?

6. Show that the development of the beautiful in architecture was an outgrowth of utility. Discussion.

7. Discuss the evolution in architecture, and its bearing upon building for the modern church.

STANDARDS

CHECK LIST FOR COMMITTEES AND ARCHITECTS

By GEORGE EARNEST MERRILL, A. I. A.

STANDARDS

CHECK LIST FOR COMMITTEES AND ARCHITECTS

Much of the material appears here in print for the first time, while other parts of it are the common property of architects and builders. In dealing with matters of the latter character, the author has, with permission, followed rather closely at times the outline contained in "Interchurch World Movement Standards for a City Church and Religious Education Plant." Some of the newer and more distinctive phases of the author's presentation have to do with acoustics, organs, recreation equipment, and classroom equipment.

No building, be it church building or any other kind of building, can be adequately planned until the uses to which it is to be put, and the capacities to be provided for, are first determined. Such determination involves a careful analyzing of the needs of the church and the setting up of a definite program. In the making of an analysis and a program, churches will find effective assistance in the departments of church architecture, which provide suggestive questionnaire forms and furnish consultative guidance of technical and specialized character.

It is possible to so organize a church building plan, in all of its phases, that the structure will be a unity with a heart. The day is passed when the school of the church, for example, is to be treated as a thing apart, a separate organization removed and distinct from the church itself. Today we think of the church inclusive. Not only is the entire structure to be provided with the best facilities possible, but it is to be so planned that contact and control from its heart, by means of its circulation facilities, is as easy and free as is the control of the human heart through its arteries, or the brain through its nerves.

During the past twenty years, buildings for hospitals, public schools, offices, railway stations, and even our homes, have shown a marked advance in planning and organization, but the church buildings, with an exception here and there, are being planned and built with little recognition of the changes of the last twenty years. The reasons for this are too many to be here discussed. Suffice it to say that a new day is dawning. The fact is recognized, and the remedy will follow.

The outline of requirements here presented is intended to cover the needs of buildings of the best type. Committees and architects will make such adjustments and modifications as the conditions may demand. They will be governed, of course, by local and state building-codes.

In the compilation of material containing such a variety of inter-related items as are here presented, it is quite possible that inconsistencies may have escaped notice. The writer will welcome notice of any discrepancies, or any suggestions tending to betterment of the data, and will give them careful consideration for the next edition.

These data constitute the composite judgment and experience of a number of technical experts whom the author has consulted, and whose names are listed herewith in grateful acknowledgement of invaluable assistance.

Ernest Flagg, Fellow American Institute of Architects.
Joseph Hudnut, American Institute of Architects.
Elmo Cameron Lowe, American Institute of Architects.
Frank C. Dillard, Architect.
Albert N. Dobbins, Architect.
A. I. McGloughlin, Architect.
J. H. Felt, Architect.
C. W. Dawson, American Institute of Architects.
Neil MacMillan, Director Building Bureau, International Committee, Young Men's Christian Association.
O. F. Semsch, Mechanical Trades Engineer.
Clifford Melville Swan, Acoustical Engineer.
H. L. Godshalk, Organ Engineer.

CONTENTS OF STANDARDS

SECTION PAGE

I. SITE 95
  A. Location 95
  B. Size and Form 96
  C. Nature and Conditions 96

II. BUILDING 98
  A. Placement 98
  B. Plan 98
  C. Design 99
  D. Structure 100
  E. Basement 107
  F. Interior Circulating Space 107

III. CHURCH ROOMS 113
  A. Main Auditorium 113
  B. Special Church Rooms 120
  C. Decorations 122

IV. CHURCH SCHOOL ROOMS 123
  A. Location 123
  B. Circulation 124
  C. General Arrangements 125
  D. Departments 126
  E. Special Rooms 129
  F. Facilities 131
  G. Interior Finish and Trim 132
  H. Decorations 134
  I. Furnishings, Equipment, and Supplies 136

V. SOCIAL AND COMMUNITY ROOMS 141
  A. Location 141
  B. General Provisions 141
  C. Rooms for General Uses 141
  D. Rooms for Social Service 142
  E. Dramatic Productions 144

SECTION PAGE
VI. RECREATION PROVISIONS 147
  A. Gymnasium 147
  B. Locker Rooms 148
  C. Showers 149
  D. Swimming Pool 149
  E. Hand-ball Courts 150
  F. Game and Amusement Rooms 150
  G. Bowling Alley 151
  H. Supervision and Control 151
  I. Furnishings 151
VII. MECHANICAL EQUIPMENT 152
VIII. ORGAN 153
  A. Location 153
  B. Space 153
  C. Accessibility 154
  D. Supports 154
  E. Console 154
  F. Blower Room 155
  G. Organ Cases 156
  H. Buying 156
  I. Maker 157
  J. Organ Extensions 157
  K. Specifications 157
  L. Grand Piano 158
IX. VISUALIZATION EQUIPMENT 159
  A. Stereopticon Equipment 159
  B. Moving Picture Equipment 159
  C. Screens 160
  D. Darkening 160
X. GROUNDS 161
REFERENCES 162

SECTION I

SITE

A. LOCATION.

1. Accessibility.

(1) *Constituency.* Central with respect to membership.

(2) *Population.* In direction of city's growth; toward town if in the country.

(3) *Approaches.* If a downtown church, close enough to main business section to benefit by convergence of main streets and car-lines; if a rural church, at junction of main roads.

2. Environment.

(1) *Quiet.* Distant from street cars, railroad trains, factories, shops, mills, police stations, and fire-engine houses.

(2) *Health.* Distant from unsanitary conditions and malodors, and from hospitals and cemeteries.

(3) *Attractiveness.* Adjoining clean and well-kept property, and near public libraries, public schools, and parks.

(4) *Setting.* In proper architectural setting, and not near overtowering buildings.

(5) *Fire.* Avoid fire dangers. Stay away from large wooden or non-fire-proof buildings, gas tanks, or other fire-spreading structures.

(6) *Competition.* Consider nearness to churches of other denominations. May or may not be objectionable, depending on size of community and other factors. Follow the golden rule. It is never advisable to build near another church of same denomination.

3. Prominence.

(1) *Visibility.* Choose a corner lot, if possible, or one at head of an intersecting street.

(2) *Elevation.* A high site has great advertising value.

B. SIZE AND FORM.

1. Building Space.

(1) *Placing.* Should be large enough and of a shape to allow for the proper placing of building or buildings.

(2) *Expansion.* Should be large enough to allow for growth and future additions.

2. Playgrounds.

(1) *Rural.* In a rural or suburban community, a plot of from three to ten acres, depending on size of community to be served, for playgrounds, tennis courts, ball grounds, pageant space, etc., is desirable.

(2) *Urban.* In congested city district, where large space is not available, then there may be a roof garden for festivals, song services, pageants, games, etc. In some cases, it is possible to obtain playgrounds within a short distance from the church building.

3. Lawns.

It is desirable to have ample lawns, with shrubbery and trees.

C. NATURE AND CONDITIONS.

1. Drainage and Soil.

(1) *Natural slope.* Preferable, with minimum slope of one inch in three feet away from building.

(2) *Surface drainage.* There should be protection from surface drainage from higher contiguous ground.

(3) *Sand or gravel.* Sandy soil or gravel tends to give dry basement; clay or peat, a damp basement.

(4) *Sub-drainage.* If the sub-soil is clay or peat, entire site should be thoroughly sub-tiled, at a depth to be determined by nature of soil, with special provision for the basement. Do not injure trees. If site is solid rock or if springs are in evidence, special sub-drainage will be necessary to conduct away permanently all water at a depth of a foot or more below the basement floor level. Install damp-proof and water-proof courses through

foundation walls and under basement floor. An experienced architect or civil engineer should supervise this work in detail.

(5) *Surface soil.* Should be a sandy loam at least one foot deep, for good lawns and landscape gardening. Well-kept lawns and clean, sightly grounds are a valuable church asset.

(6) *Playground surface.* Should be rapidly drained, quick-drying, with sand or gravel sub-soil, and with turf or artificial surface of crushed stone or gravel. Natural soil preferred to artificial.

2. Water Supply.

(1) *In country.* For a rural site, it is absolutely essential to have an abundant supply of unquestionably pure drinking water.

(2) *In city.* There should be ample provision for needed water supply, including drinking fountains and sanitary conditions.

SECTION II

BUILDING

A. PLACEMENT.

1. Orientation.

(1) *Light exposure.* Buildings should be so placed upon the plot that the light exposure will be, in order of preference, southeast, east, southwest, or west. Buildings should not have full northern or southern exposure.

(2) *Overhead lighting.* If the building is a one-story structure, poor orientation may be overcome in part by means of overhead lighting.

(3) *Diagonal placement.* Diagonal placement of the building upon its site may be made an esthetic advantage by means of the proper planting of trees and shrubbery.

2. Position.

(1) *Esthetic effect.* Building should be so placed as to secure the maximum of esthetic effect.

(2) *Best utilization.* Building should be so placed as to provide for the greatest possible utilization of grounds.

(3) *Future additions.* Building should be so placed as to permit either future additions to the present building or additional buildings.

B. PLAN.

1. Accommodations.

Plan to give, for the amount to be expended, the maximum accommodations in proper sequence of arrangement and relationship consistent with safety and comfort of occupancy, ease of use, and pleasing appearance. Keep in mind that it is of the utmost importance to make ample provision for the free circulation of occupants.

2. Economy.

Plan to make the cost of up-keep as low as is consistent with permanency, and have regard to economy in operation and control of the structure.

3. Extensions.

Keep in mind possible extensions or additions, in planning the building.

(1) *Stairways.* Should be so located as to be independent of possible additions, and to serve future as well as present needs.

(2) *Heating.* Boiler and coal rooms should be large enough to accommodate future needs, and the heating mains and ventilating ducts should be of such size and so located as to properly care for ultimate demands.

(3) *Administration.* Administration and toilet rooms should be located with respect to the possible ultimate development of the plant.

C. DESIGN.

1. Churchly.

Honesty, if nothing else, demands that the building should be churchly, unmistakably indicating its intended use, both externally and internally.

2. Educational.

The church school building should clearly indicate its use, and at the same time be tied in type sympathy to the church building; or, better still, the two so designed as to form one self-expressive unit.

3. Beautiful.

The whole structure should be characterized by dignity and beauty. The church should properly advertise itself through a worthy building. Even an inexpensive building may be made substantial by a proper choice of materials, artistic by a right proportion of lines and masses, and suggestive of its religious use by a form of structure which does not have to be labeled.

4. Consistent.

The building should be architecturally consistent; that is, it should conform throughout to the line forms and movements established by the architectural type after which it is built. Any variations in these should be in harmony with the symmetry and general effect of the building.

5. Simple.

All costly ornamentation which does not add to utility should be avoided unless absolutely necessary in order to make the building conform to its type.

6. Type.

Practically all the types of church architecture will lend themselves to modern conditions and needs.

(1) *Geography.* In selecting the type of architecture, consider the location. One location will demand the Colonial type, another the Gothic type, etc.

(2) *Materials.* Some types are more costly than others. So consider materials available within the means of the church.

(3) *Size.* Choose type best suited to the size of the structure.

(4) *Harmony.* The building should be in harmony with surrounding church structures. This does not mean duplication of type or materials, but rather an addition to existing buildings of a type not in architectural discord.

(5) *Competition.* Take into account the architecture of other large public buildings in the immediate vicinity.

D. STRUCTURE.

1. Desirable Standard.

(1) *Fire-proof.* It is desirable that fire-proof materials be used throughout, particularly in all structures of more than one story; and the most stringent requirements of all fire prevention laws should be observed. Marble, granite, and other stone materials produce effects of enduringness, massiveness, and solidity, but these materials are more affected by fire than is vitrified brick or reenforced concrete.

(2) *Durable.* Build substantially of enduring materials, and with the best workmanship. The first outlay for the best construction often is but a small per cent above that for poor construction, and the difference in first cost is more than saved in a few years in the smaller costs for repairs. "It is too often the case that architects are obliged to cut down the thickness of walls and partitions and to reduce the size and quality of the timber or other structural items because a building committee insists on having a large building for little money. This is false economy, as will become apparent after the building is occupied. Better reduce the size of the building, or build only a part of it at the beginning, than cut down the quality and quantity of the material."

2. Building Code.

The National Board of Fire Underwriters, in its Building Code, under its classification of churches, states: "All buildings of this class shall have the floor over cellar or basement which is nearest to grade level of fire-proof construction. Buildings of this class over three stories, or forty feet high, shall be of fire-proof construction throughout, except that church spires need not be fire-proof until they exceed seventy-five feet in height. A wooden spire shall not be placed nearer any other building or structure than the equivalent of its height measured from its masonry support to the pinnacle."

3. Construction Classification.

Class a. A building constructed entirely of fire-resistive materials, including its roof, windows, doors, floors, and finish.

Class b. A building of fire-resistive construction in its walls, floors, stairways, and ceilings, but with wood finish, wood or composition floor surface, and wood-roof construction over fire-resistive ceilings.

Class c. A building with masonry walls, fire-resistive corridors and stairways, but with ordinary construction otherwise, i. e., combustible floors, partitions, roofs, and finish.

Class d. A building with masonry walls, but otherwise ordinary or joist construction and wood finish.

Class e. A frame building constructed with wood above foundation, with or without slate or other semi-fire-proof material on the roof.

4. Height.

The church building should not be more than two stories above the basement, except in very congested city districts, where it may seem necessary to build three stories for the educational work, provided the construction is strictly fire-proof.

5. Foundations.

(1) *Depth.* Foundations should go at least below frost line, and to such additional depth as is necessary to secure a firm support for the walls and piers to prevent settling.

(2) *Footings.* Footings of foundations may be of concrete, reinforced where necessary, or of other material suitable to the load to be carried and the bearing capacity of the soil.

(3) *Water-proofing.* Foundation walls and floors enclosing basement should be water-proofed.

6. Walls.

(1) *For classes a and b. (See Construction Classification, page 101.)*

a. Exterior walls. Exterior "bearing walls" should be of solid masonry or of steel columns and girders carrying masonry panels or curtain walls.

b. Interior walls. Interior walls, where load carrying, should be same as exterior walls.

c. Non-bearing walls. Non-bearing walls and partitions should be of fire-proof blocks or other fire-proof materials. Block partitions allow freedom in rearrangement and replacement.

d. Furred exterior. The interior surface of exterior walls, if of brick or masonry, should be furred or so backed with hollow tile as to give dead air space.

e. Steel fire-proofed. All steel should be thoroughly fire-proofed; at least four inches in thickness on all sides of columns and two inches in thickness around girders and beams.

(2) *For classes c and d. (See Construction Classification,*

page 101.) Exterior walls and interior partitions to be as stated above under D. 3.

7. Floors.

(1) *For classes a and b. (See Construction Classification, page 101.)*

a. Tile. Hollow tile construction between steel beams.

b. Concrete. Reinforced concrete construction.

c. Combined. Combined hollow tile and reinforced concrete.

(2) *For classes c, d, and e. (See Construction Classification, page 101.)* As stated above under D. 3.

(3) *Basement floor.* In each class of building the basement floor should be laid of concrete, except when used as drill or playroom. " In building with a basement to be used as a playroom or drill-room, hygiene requires that it should not have a cement floor, as the cement wears off while the children are playing or marching, and the air becomes filled with a heavy dust that is especially deleterious. The floor should be of asphalt or some hard wood."

(4) *Basement uses.* The basement should not be used for social and educational purposes, particularly when its floor is more than three feet below the ground level.

(5) *Sound-proof.* Where floor construction is of wood joist they should be made very stiff, and no expense should be spared to make them sound-proof. This is best done by introducing a porus fire-proof material between joist, or by using heavy Cabot's quilt or deadening felt on underflooring; then 2 x 3 sleepers, sixteen inches on centers, to which the finished floor is nailed, care being taken to prevent nailing through the quilt.

(6) *Warmth.* Cheaply constructed floors are cold and cause suffering and sickness during winter months. Two or more thicknesses of building or thick asbestos paper between the floor layers or a poor mixture of mortar or other porous material between floor timbers, about half-way between the bottom of the timbers and the floor boarding, holding it in place by strips of furring nailed to the sides of the floor-beams, will add greatly to warmth of exposed floors. Use at least one layer of three-ply sheathing paper between rough and finish flooring.

(7) *Shrinkage.* Narrow finish floor boarding lessens width of each shrinkage crack.

(8) *Attic.* If building has an attic, it will be found advantageous, on grounds of economy of heat in winter and comfort of occupants in winter and summer, to cover the attic with a floor.

8. Roof.

(1) *Form.* The form of the roof will be determined by the type of architecture selected for the building and the purpose for which the roof is used.

(2) *If sloping.* Sloping roof should be laid with slate, tile, or asbestos shingles to secure a lasting wearing result and fire resistance from without. Provide copper ridge and hip rolls, valley linings, gutters, and leaders, and snowguards where needed.

(3) *If flat.* Flat roof should be laid with thick slate or flat tile in mastic on water-proof base.

(4) *Roof garden.* If flat and used as a roof garden for festivals, song services, play, and other out-door activities, its construction should care for the following:

a. Wearing surface. Proper wearing service, adequate overhead covering, rail protection, and side shields against wind, rain, and snow.

b. Storage facilities. Storage facilities and the extension of all service systems to the roof garden.

c. Special equipment. Special equipment consisting of tables, chairs, portable stage, and piano.

9. Entrances.

(1) *Adequate.* Adequate, main and secondary entrances should be provided both for the church building and the church school building.

(2) *Main.* The main entrance should be more than adequate for the number of persons using the building, and should open directly into the main foyer, or narthex.

(3) *Secondary.* Secondary entrances, of required width, with or without double doors, opening out, should be placed near the

stairways and at the intersections of the main and secondary corridors. There should be separate entrances to the heating plant, to the library, and to the social rooms or other parts of the building used for club purposes. There should be at least one entrance leading directly from the playgrounds to the gymnasium.

(4) *Obstructions.* All entrances should be free from outside obstructions.

(5) *Steps.* Outside steps, preferably not more than one, certainly as few as possible and non-exposed. Inclines, where possible, with non-slipping surface provision. Stone or concrete. Five-inch risers and twelve and one-half-inch non-slipping treads.

(6) *Driveway.* A porte cochère, or covered driveway, for automobiles, at an entrance, is a most desirable feature.

10. Exits.

There should be at least two ways of exit from every public building. Allow twenty inches in width of opening for each one hundred persons, but no exit to be less than four feet wide nor narrower than stairs and corridors leading to same. All exterior exits must open out and should be equipped with panic bolts. This applies also to entrances which might be used as exits. The standing leaf of all pairs of doors leading to ways of egress should be fastened by face T-bolts, operated at top and bottom by one handle placed at a convenient height from the floor. Edge bolts are difficult to operate, and should not be used in public buildings.

11. Vestibules.

(1) *Light.* Should be well lighted.

(2) *Width.* Should be ten to sixteen feet wide, and should have water-proof floor.

(3) *Doors.* Should have double swing doors; or, if single swing, then opening out.

12. Fire Escapes.

Enclosed fire-proof stairways should be required in all buildings of two stories or more. Exterior fire escapes cannot be considered as an adequate substitute for such stairways, though they are recommended where no other provision is or can be made.

13. Interior Doors.

(1) *Outward.* All doors should open outward.

(2) *Bolts.* All assembly-room doors opening into corridors should be provided with panic bolts, door checks, and foot stops.

(3) *Stairs.* No door should open toward stairs at bottom of any stairway.

(4) *Light.* Doors opening into corridor should have a large light of heavy, clear glass set in the center from about three feet six inches to five feet six inches above the floor, depending on height of occupants of room.

(5) *Width.* Single doors which connect classrooms with public corridors and with departmental assembly-room should be three feet six inches wide.

(6) *Transoms.* Transoms, hinged at bottom or side centered, and operated by adjusting rods from within, for all corridor doors except to toilet rooms.

(7) *Glass panels.* High, clear-glass panels in doors of classrooms will permit official supervision without entering or disturbing class.

14. Windows.

(1) *Area.* Area proportional to floor area in schoolrooms as hereinafter noted.

(2) *Placing.* So placed that light will reach the individual preferably from the left, and never so that he will face the light.

(3) *Drafts.* Should be so arranged that, where artificial ventilation is not relied upon, the room may be continuously supplied with a sufficiency of fresh air without the occupants feeling a draft. This may be accomplished by a simple and yet effective arrangement consisting of a twelve-inch strip of plate glass whose lower edge rests on inside window stool, fastened at ends to window jamb, sloping inward toward top, without shutting out light.

(4) *Stools.* Windows should have stools about three feet above floor, and top of windows should extend to ceiling, where

the most effective light is admitted. Depressed metal piece set in top rail of upper sash for opening with window pole. Flush or surface lifts on stiles of lower sash, about twelve inches above stools.

E. BASEMENT.

1. Depth.

Depth below grade should not exceed three feet, except for rooms not used for educational and social purposes, such as boiler rooms, ventilating, and coal pits, which may be lower and at a depth which will permit the direct dumping of coal from driveways, and the direct removal of ashes. Ducts for the distribution of air may be enclosed in moisture-proof passages underneath the floor. Keep the height of the rooms on the basement floor down to a maximum of twelve feet, except where the recreation room is on the basement floor. If twenty-five per cent. of the ceiling is covered with ducts, add their height to the height of the rooms used for meeting purposes.

2. Boiler Room.

Fire-proofed. If no other portion of the structure is built of fire-proof materials, the ceiling, as well as the walls and floor of boiler room, should be absolutely fire-proof. This will include automatic closing fire-proof doors and windows to this space. Experience shows that a large percentage of fires in church buildings start in the furnace room.

3. Air Space.

Where there is no excavation below the first floor, provision should be made for thorough and constant ventilation beneath.

F. INTERIOR CIRCULATING SPACE.

1. Stairways.

Since in times of panic stairway arrangements become a matter of life and death, they cannot be given too careful consideration. Conform in every detail with the requirements of school and theatre laws in the cities.

(1) *Construction.*

a. Separation. Should be separated from corridors by fire-proof doors in basement and on other floors.

b. Fire-proof. All stair construction and enclosing walls, floors, and roof should be built entirely of fire-proof material. In wooden buildings, where the cost of fire-proof stair enclosures is prohibitive, the sides of the stair-stringers should have the spaces between the studs or wall-furrings so stopped with brick or mortar as to effectually prevent fire from passing up between the studs or furrings back of the stair-stringers, and the soffits of enclosed stairs, and the partitions on the stairway side, should be plastered on expanded metal lathing. At least two cut-offs, or fire-stops, should be put in each flight of stairway.

c. Entrances. All encased fire-proof stairways or other fire escapes should have separate entrances and exits.

d. Treads and risers. Dimensions of treads and risers should be based approximately on the table, as shown in diagram, "Stairway Data for Churches and Church Schools."

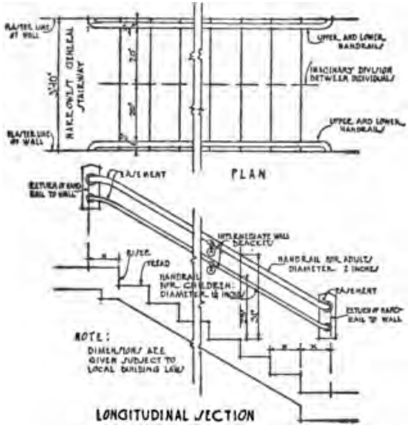
e. Material. The stairs should be of iron, or other fire-proof material, with imbedded safety treads, not less than five and one-half inches in width and made of a combination of steel and soft metal, or of rough-surfaced abrasive material.

f. Nosing. Nosing of treads must not project more than one and one-quarter inch beyond the plane of the riser.

g. Landings. There should not be more than fifteen nor less than eight steps between landings, and depth of landings not less than the length of the tread of the stairs leading to it.

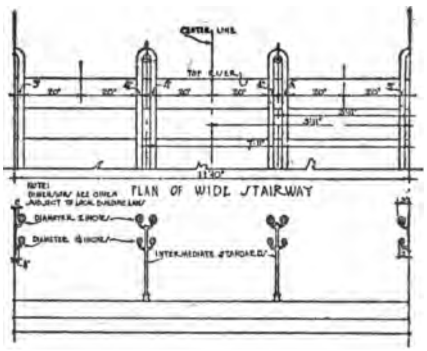
h. Width. Width of stairways will vary with the width of the corridors. They should, however, not be less than three feet ten inches. If more than five feet, there should be a dividing hand-rail. As twenty inches in width of stair should be allowed for each individual, and, as there should be room for individuals to pass on stairs, forty inches in width are thus required. Adding to this three inches on each side for hand-rails gives a minimum width of three feet ten inches for the narrowest general stairway. (See diagram of "Stairway Data.")

i. Newels. Where newels are not used, hand-rails should be extended with easements at top and bottom an amount equal


PLASTER LINE OF WALL
NARROWEST GENERAL STAIRWAY
3'-0"
20"
20"
PLASTER LINE OF WALL
UPPER AND LOWER HANDRAILS
IMAGINARY DIVISION BETWEEN INDIVIDUALS
UPPER AND LOWER HANDRAILS
PLAN
RETURN OF HAND RAIL TO WALL
EASEMENT
INTERMEDIATE WALL BRACKETS
RISER
TREAD
HANDRAIL FOR CHILDREN: DIAMETER 1½ INCHES
HANDRAIL FOR ADULTS: DIAMETER 2 INCHES
EASEMENT
RETURN OF HAND-RAIL TO WALL
24"
30"
NOTE:
DIMENSIONS ARE GIVEN SUBJECT TO LOCAL BUILDING LAWS

LONGITUDINAL SECTION

SHOWING HANDRAIL HEIGHTS ABOVE TREAD AT STAIR RISER



CROSS SECTION

SHOWING SUPPORT FOR INTERMEDIATE HANDRAILS

TABLE OF RISERS & TREADS FOR STAIRS		
RISER IN INCHES	TREAD IN INCHES	
5	12½	PREFERRED FOR CHILDREN -
5¼	12¼	
5½	12	
5¾	11¾	
6	11½	
6¼	11¼	
6½	11	PREFERRED FOR ADULTS
6¾	10¾	
7	10½	
7¼	10¼	
7½	10	
7¾	9¾	
8	9½	NOT ALLOWED FOR A FIRST CLASS UNDER NEW YORK CITY
8¼	9¼	
8½	9	
8¾	8¾	
9	8½	
9¼	8¼	
9½	8	

STAIRWAY DATA FOR CHURCHES AND CHURCH SCHOOLS

THE DEPARTMENT OF ARCHITECTURE
THE AMERICAN BAPTIST HOME MISSION SOCIETY AND
AMERICAN BAPTIST PUBLICATION SOCIETY
23 EAST 26TH ST. NEW YORK CITY.

to the depth of the stair tread and returned to walls to prevent clothes catching. Where newels are used, that at top should set back one full tread depth from top riser. Intermediate and bottom newels should center on intermediate and bottom risers.

j. Hand-rails. Where increased width of stairway is desired or required, add twenty-four inches for each increase; i. e., stairway widths would be three feet ten inches, five feet ten inches, seven feet ten inches, nine feet ten inches, eleven feet ten inches. For stairways exceeding three feet ten inches in width, twin run intermediate hand-rails must be introduced, so that each individual has an independent hand-rail. All stairways should be provided with hand-rails strongly constructed and firmly secured, preferably of two heights and of section suitable for children and adults. (See diagram of " Stairway Data.")

k. Dangers. Any landing should have a width equal to the length of the longest tread in the stairs leading to it. Winders are prohibitive. Incidental steps on the interior are to be avoided in stairways, corridors, or elsewhere. Single steps, except at an outside entrance, are extremely dangerous. Two or even three interior steps are likewise objectionable. Top risers should project at least one foot into stairway from corridor wall line. Especial care should be taken that the outer posts and balusters of open stairways are strong enough to prevent their giving way under pressure of panic. Balustrade side of stairways may be screened in to such height as to prevent children climbing over balustrade in a panic.

(2) *Number.*

a. Safety. There should be at least enough stairways to empty the balcony or second floor in two minutes. Twenty-three inches in width of stairways should be allowed for the first one hundred persons, and twenty-four inches for each additional one hundred persons.

b. Separation. Where toilet rooms are located in basement there should be separate stairways to basement for boys and for girls.

(3) *Wall finish.*

a. Surfaces. Wall surfaces should be smooth, to avoid collection of dust. Apply oil paint (which may be washed).

b. Color. Wall surface to a height of four feet or more above floor should be finished in white or light-colored glazed tile, Keene's cement, or Portland cement, to lessen injury from use.

c. Wainscoting. Wood wainscoting offers harbor for vermin, is easily damaged, and is more difficult to repair.

(4) *Lighting.* Lighting provisions for adequate natural as well as artificial light should be made.

(5) *Safety.* No storage room should be permitted under stairways.

(6) *Sanitation.* Where angles and corners would otherwise occur in stairways construction, the plans should provide for concave surfaces (coves) thus preventing the accumulation of dust, dirt, and germ-carrying filth in places inaccessible to brooms and brushes.

2. Corridors and Foyer.

(1) *Corridors.*

a. Location. Determined by the position of the auditorium and special rooms. Should provide ready access to the stairways and permit rapid circulation to every part of the building.

b. Size. In order that natural ventilation may be more effectual, all main corridors should be large and airy, and have windows opening directly to the outer air. The main corridors or halls ought to be wider than secondary halls. They should be wide enough to prevent congestion in both main and secondary corridors. While too narrow halls are to be emphatically condemned, excessively wide halls, on the other hand, are to be avoided, excepting only the church foyer, or narthex. Very wide halls, besides the original increased cost in construction, entail additional expenditure to keep clean the unneeded floor area and to warm and ventilate the unneeded air-space.

c. Construction. Material. Floor surface preferably fire-proof. Where the construction is class a, b, and c (see page 101), a concrete under-surface may be overlaid with an approved unglazed tile, fire-proof mastic, cork, or battleship linoleum. Walls and ceilings fire-proof. All departmental assembly-rooms and other major rooms should open into corridors. Turns in corridors to be avoided where possible, and should be free from obstructions which prevent easy egress. Sanitary coves and free from dust catchers. Wall finish. (Same as Section II, F, 1, (3),) Lighting. Should have adequate natural light for day use as well as ample artificial light for night use.

(2) *Foyer, or narthex.*

a. Location. Should be located directly off main entrance, and should have principal corridors and stairways leading from it to the school, the social, and the recreational portions of the structure. This should be thought of as an artery leading from the auditorium, the heart of the entire structure.

b. Size. Should be large enough to permit exchange of greetings on the way out from meetings and distribution of the people to different parts of the building without confusion.

c. Equipment. Should be equipped with door mats, umbrella racks, and, in some cases, with check-rooms for outer wraps.

d. Doors. Doors and sliding sash are frequently desirable between foyer and main auditorium.

SECTION III

CHURCH ROOMS

A. MAIN AUDITORIUM.

1. Location.

(1) *Level.* Finished floor at its lowest level should not be more than three feet above outside grade unless basement conditions so require. One-half foot is preferable.

(2) *Inclines.* Inclines, under cover, not exceeding a pitch of one foot in ten feet (ten degrees), with non-slip surface, leading from sidewalk level to building entrance are preferable to steps. A pitch of one foot in twenty feet (five degrees) is preferable. Stairs are preferable to inclines exceeding one foot in six feet eight inches (fifteen degrees). No incline should in any case exceed one foot in five feet (twenty degrees).

(3) *Steps.* Where it is necessary to employ steps at entrance the difference in levels between exterior and interior should be reduced to the minimum. But one exposed outside step is recommended. If additional entrance steps are necessary, they should be within the building, or under cover.

(4) *Audience.* The audience should be seated as far as possible from street and other disturbing noises.

2. Plan.

(1) *Shape.* A room oblong in plan, with the pulpit at one end, gives at once a form within which the sense of a worshipful atmosphere is most easily produced and in which the maximum number of individuals can see and hear. The length should never be more than twice the width, and distance from pulpit to rear seat of audience should not exceed eighty feet. Costs of roof trusses increase rapidly beyond forty feet. Rooms square, circular, or semicircular, with pulpit in a corner or on the base of a cord, are more difficult to treat architecturally and to obtain the

sense of an atmosphere other than secular. Pulpit, choir, and baptistry must be visible from every seat.

(2) *Size.* Size should be adequate for maximum number of people to be served and for growth over the period of years to be covered by the life of the building.

(3) *Expansion.* Expansion should be provided by use of gallery. Reliance upon side or rear rooms for expansion, depending upon movable partitions or screens, is inadvisable. Such movable devices cannot be made and kept sound-proof. Hence expansion-rooms so arranged are rendered less effective for their own individual use the entire year merely to afford an unsatisfactory expansion for the extraordinary occasion.

3. Acoustics.

(1) *Ceilings.* Ceilings should be kept as low as is consistent with good architecture.

(2) *Width.* Narrow auditoriums are better than broad ones. The pulpit or platform should always be on the short side of a rectangular auditorium.

(3) *Domes.* Domes and other curved surfaces are dangerous to acoustics. When contemplated, expert advice should be had.

(4) *Galleries.* Galleries, or balconies, help the acoustics especially if carried around three walls.

(5) *Platform.* Pulpit floor should be at least three feet above floor of auditorium. A greater elevation is desirable. On other grounds, however, there are objections to high pulpit platforms.

(6) *Pulpit.* Pulpit should preferably be placed near some wall, and never beneath an open dome or tower, or in front of a deep recess.

(7) *Sounding-boards.* Curved sounding-boards should never be used. If a sounding-board is necessary, it should be a plane surface about eight feet in diameter hung horizontally about two feet above the speaker's head.

(8) *Cushions.* Cushions in the pews tend to offset the effect of variations in the size of congregation. They should always be used if the average attendance is small.

(9) *Carpets.* Carpets, at least in aisles and on platforms, are desirable.

(10) *Wall surface.* Soft plaster on lath, painted with water color, is preferable to hard building materials on interior surfaces. Wood finish should be used freely.

(11) *Size.* Acoustical difficulties increase with the size of an auditorium. In the case of a large church, the services of a competent acoustical engineer should always be employed.

4. Floor.

(1) *Form.* Ramp is necessary except in small structures. Ramp should begin about twenty feet back from the platform, with a six-inch rise every ten feet to rear of room. Adjustable (level or incline) floor controlled by hydraulic pressure is possible. Aisles should be noiseless and durable.

(2) *Finish.* Cement overlaid with carpet, patent process or battleship linoleum is most desirable. Hard maple or oak, of narrower boards, is the most satisfactory wood.

5. Seating.

(1) *Pews.* Pews are preferable to auditorium chairs, on main floor or in gallery.

(2) *Spaces.* From thirty-two inches minimum to thirty-six inches maximum should be allowed from back to back of pews. Thirty-three inches is quite usual where kneeling-stools are not used.

(3) *Measurements.* From eighteen inches to twenty-two inches maximum should be allowed in calculating the number of people who may be seated in a pew. Twenty inches is an average usually used.

(4) *Capacity.* By these allowances it will be found that from seven to nine square feet of floor space will be required for each individual, exclusive of pulpit platform, chancel, choir-gallery, and narthex.

(5) *Placing.* Seats should be placed so that all auditors face the pulpit.

(6) *Sittings.* Not more than twelve seats between aisles.

(7) *Equipment.* Seats should be provided with book-racks, communion-cup holders, and envelope containers. Kneeling-

racks should be provided where required. Ottomans for foot rests in quantities, size, and finish as desired.

(8) *Lettering.* All pews should be distinctly numbered or lettered.

(9) *Cushions.* Cushions on pew seats are usually desired. They assist the acoustics.

6. Aisles.

(1) *Width.* Width of aisles and number of sittings crosswise of the auditorium should be taken account of as a predetermining factor in establishing the width of the structure, and not the reverse approach. Main aisles from four feet to seven feet in width, depending on length of auditorium; five feet six inches is an average. Side or secondary aisles, from three feet to five feet in width, or a four-foot average.

(2) *Number.* The width of auditorium will suggest the number of aisles.

(3) *Symmetry.* A center aisle is considered by some to be desirable, from the view-point of the auditor, and as giving a natural sense of direction and emphasis toward the pulpit and chancel.

7. Walls and Ceiling.

These will vary in height and form to conform with design.

8. Natural Illumination.

(1) *Quantity.* The natural lighting should be such as to provide at least three-foot candles of light for each seat in the audience chamber and in the gallery, or balcony. By three-foot candles of light is meant the illumination afforded by three standard candles at one foot's distance. This result can often be secured by overhead lighting, though this is the least desirable form of lighting.

(2) *Location.* Windows to the left, right, and rear should furnish the bulk of all natural lighting. Care should be taken to provide for elimination of all objectionable, irritating light in the eyes of auditors from windows in front of auditorium, and in the eyes of speaker and choir.

(3) *Decorations.* All decorative windows should conform to the best standards of art and biblical illustration. Memorial windows should be indicated by small tablets, located underneath the windows, and not on the memorials themselves.

9. Galleries.

(1) *Desirable.* The most satisfactory provision for auditorium expansion is by means of a balcony or gallery.

(2) *Location.* In an auditorium properly proportioned and seating less that four hundred, there should be only a rear gallery, but there should be galleries on three sides of auditorium seating more than four hundred.

(3) *Height.* Floor at front of balcony should be from eight to twelve feet above floor of auditorium, according to depth of auditorium under balcony. Many balconies are too high.

(4) *Stairways.* In evangelistic churches having balconies on three sides there should be direct stairways from balcony to platform, or to floor of church near platform.

(5) *Seating.* Seats should rise to afford perfect vision to a point at center of platform.

10. Pulpit or Chancel and Platform.

(1) *Form.* Form to be determined by the denomination of the church and the interior finish of the auditorium.

(2) *Platform.* Large enough to provide for choruses, special services, and pageants, and accessible from halls or dressing-rooms on both sides. High enough to give all parts of auditorium easy view of speaker. A minimum height of one foot six inches, which should increase in direct proportion with the size of the auditorium where the auditorium floor is level. Where auditorium floor is ramped, the platform level should approximate that of the church floor at the rear.

(3) *Furniture.* Movable rails. Movable furniture, such as choir stalls, lectern, pulpit, litany desk, organ console, etc. Appropriate chairs; at least three in number.

(4) *Levels.* If construction of stage levels is necessary, they should be so constructed as to appear as an integral part of the architectural scheme.

11. Baptismal Provisions.

(1) *Form and location.* Form to be determined by denomination of the church. Location should secure effect of dignity, and should provide visibility for audience and for organist and choir.

(2) *If for immersion.*

a. Dimensions. Width, not less than four feet. Six feet or more preferable. Length, not less than eight feet. Ten feet or more preferable. Ceiling height, not less than seven feet. Eight feet or more preferable. Depth of water, not less than thirty-four inches. Thirty-six inches or more preferable. Height of curb above water level, not less than six inches and not more than eight inches. Floor at one front corner, usually right-hand, to slope down to a greater depth of six inches for candidates over six feet in height. Scenic effect, quiet and impressive, and not grotesque.

b. Approaches. Separate entrance and exit for candidates. Steps, if necessary, not to have greater than seven-inch rise with eleven-inch tread. Incline to and from baptistry preferred, with slope of not more than one foot fall in eight feet of path. Non-slip provisions on incline. Wall hand-rails. A dry path to parallel the wet path, with low water-proof wall dividing them.

c. Screen. Provide a fixed screen, so that attendants at entrance and exit are at no time in view of audience, and so that candidate is not visible before entering and on leaving the baptistry.

d. Robing rooms. For minister and for candidates. Separated compartment areas for each sex, with toilet, lavatory, and drying facilities.

e. Water. Control temperature of the water.

12. Communion Equipment.

(1) *Table.* Table and chairs in harmony with interior finish of the auditorium.

(2) *Linen.* Service linen, individual service equipment.

(3) *Rail.* Communion rail, with kneeling steps where required.

13. Choir Space.

(1) *Size.* Large enough to seat one-twelfth to one-twentieth of capacity of auditorium, i. e., six hundred capacity, twenty-four to forty-eight choir seats; one thousand capacity, forty-eight to seventy-two choir seats; fifteen hundred capacity, seventy-two plus. It should also accommodate organ console and grand piano; or these may be located elsewhere as desired. Curtains may be desired that will close all but front for solo or quartet work. Large enough platform space to accommodate pageants.

(2) *Location.* May be on pulpit platform at one or both sides. Seats so arranged that choir will face organist and preacher. All singers in full view of audience.

(3) *Construction.* Provide not less than thirty-six inches from back to back of chairs. Build at one or two levels, with temporary seats clamped to risers, all of which may be rearranged for special song services, festivals, etc., or entirely removed for pageant production. Easy of access for processionals and pageants, through audience-room or from choir-rooms on either side. Inclined plane approaches preferable to stairways.

(4) *Equipment.* Individual seats with rack (back of chair), to hold octavo music and hymnals when not in use. Seats for adults and children. Storage space for seats and riser staging. Orchestral stands. Conductor's stand and elevation.

(5) *Hangings.* Neutral-toned hangings or a back drop to cover organ and to form background for pageants.

14. Choir-Rooms.

(1) *Dressing-rooms.* Dressing-rooms with entrance directly from street. One room for boys and men (general rehearsal room), and one for girls and women, both to be provided with: toilet facilities; wardrobes, containing individual lockers or hooks for choir gowns, etc.; seats and tables; rugs and pictures, to make room attractive; and extra hooks and shelves along walls, for pageant costumes.

(2) *Rehearsal-room.* The dressing-room for boys and men may be the general rehearsal-room. The room should be sound-

proof and the acoustic properties should be satisfactory. It should be equipped for this purpose with: Grand piano; seats for all; standing room for entire choir in which to form processional; organ extension played from regular organ console; desk, card catalogue, and repair and marking equipment for secretary and librarians; director's office, small inner room, off from rehearsal-room; adequate artificial lighting; easy and well-lighted approach to choir gallery; and signal or buzzer system from organ to rehearsal-room.

(3) *Music storage.* Music storage-room, arranged with sheet-music shelving so scores may lie flat. To have doors with locks.

B. SPECIAL CHURCH ROOMS.

1. Coat Room.

Convenient to entrance to the auditorium. Should be equipped to permit use of a system of checking, which should include provisions for wet umbrellas and rubbers.

2. Chapel.

Chapel or small assembly-room and ladies' parlor. (See Section IV, D, 9.) A room on street front, with a seating capacity about one-quarter of floor-sittings of main auditorium. Movable chairs. Equipped to meet the needs for which the main auditorium is too large. Fireplace. Kitchenette. Retiring-room and toilet.

3. Board Room.

Parlor and church board room, and for men's club. (See IV, D, 10.) A room large enough for meetings of the church board, for larger committees, and to serve as a church parlor. Fitted with long table, chairs, carpet, and with appropriate decorations. Should be cozy in effect, and equipped with comfortable furniture. Fireplace. Retiring-room and toilet. Outside entrance.

4. Pastor's Study.

Light, well-ventilated and well-heated, desk, filing-cabinets, bookcases, small conference table and chairs. If convenient to church office, should be separated by sound-proof walls. Lavatory and toilet adjoining. Outside entrance.

5. Church Office.

Room for the church secretary, equipped with desk, chairs, safe, filing-cases, card index of membership, telephone. (See Section IV, E, 1.) Outside entrance.

6. Church Vault.

To be used by the pastor and the church officials for the preservation of church statistics and records. Should be damp-proof and fire-proof. Should adjoin church office.

7. Waiting Room.

Waiting room and for home department of church school. Opening off of narthex for use as waiting room by elderly people late for church service; also for emergency uses. To have toilet room adjacent.

8. Service Rooms.

(1) *Workshop.* Workshop of superintendent of buildings, engineer, or janitors. This shop should be equipped with tools and janitor's materials and supplies needed for repair work on any of the mechanical systems installed. Efficiency in the storage and handling of supplies should be possible through facilities provided. The equipment may consist of a carpenter's bench, vises, anvil, set of plumbing tools, and the like.

(2) *Service office.* Private room for superintendent of buildings and grounds. Janitors' or engineers' room should be conveniently located near heating plant and toilet rooms. Equipped with wash basin, sink, and individual bath, thermostat, telephone, desks, record-files, and other supplies. Signal system connects this room with entrances.

(3) *Fuel room.* Sufficiently large to hold season's supply of fuel; convenient to heating plant and to street or driveway, in order to permit dumping of fuel directly from trucks. Dumping should be so accomplished as to eliminate necessity for levelling of fuel.

(4) *Printing room.* Size in proportion to demands. To house printing-press, type-cases, roller, ink, and paper storage, mimeograph or other copying processes, sink, and tables.

C. DECORATIONS.

1. General.

(1) *Harmony.* Interior decorations of the church should be as productive of a worshipful attitude as possible. Woodwork, dado, walls, ceilings, windows, furniture, shades, finish, and fixtures should be in color harmony.

(2) *Color balance.* Care should be taken to secure restful harmony of proportions, and particularly of colors. Balance in color relation produces a restful effect and leaves the mind at ease for contemplation. Perfect color balance is found in the middle tone value of pure neutral, which is a gray made by mixing black and white in equal quantities. This balanced tone, or tones closely related to it, should be used as often as possible. Color interest is secured by using very neutral qualities of such colors as blue, green, and yellow. To produce a very neutral hue, use the middle value of gray and add a small quantity of color pigment. Brilliant hues in any value, light, middle, or dark, are invariably irritating and distracting.

(3) *Symbolism.* The interior structure of church-buildings should, as far as possible, symbolize many of the essential elements of religious life, such as simplicity, genuineness, cleanliness, permanence, modesty, and stability. Over-ornateness should be avoided.

2. Wood Finish.

Quartered oak, plain oak, ash, cypress, and yellow pine are, in the order named, desirable for trim of doors, windows, etc., where finish is to be in varnish, but always with dull surface. White wood and other soft woods are suitable for staining or painting (dull finish).

SECTION IV

CHURCH SCHOOL ROOMS

A. LOCATION.

1. Relations.

Intimate relation of school and main auditorium buildings to be indicated by oneness of design; yet each so accented as to show at a glance its purpose. Immediate corridor connections under cover, so arranged that upon dismissal of meetings in either portion, the path of those dismissed will easily lead to the other portion. Designer may think of the main auditorium as the heart of the project, with all other portions tied to it.

2. Floor Level.

Floor of rooms for school purposes to be above outside grade level, except that only adult men's classrooms may have floor level below grade, and that not more than three feet.

3. Sunshine and Air.

Rooms for lower grades, and for women, to be located on the east to south to west sides of the building.

4. Natural Illumination.

(1) *Quantity.* Provide at least five-foot candles of light for each individual wherever seated. (See Section III, A, 8.) Groups of windows avoid shadows from piers.

(2) *Direction.* Windows in assembly-rooms to be at left of students and equal to one-fifth of floor area on south to one-fourth of floor area on north exposed walls. (See Section IV, C, 3, (3).)

(3) *Drafts.* Protect students from window drafts by sloping glass shields at bottom of lower sash or by other device.

(4) *Shades.* Two shades on rollers fastened at level of meeting rail of sash; the shade on the lower roller to run up. This will permit tempering the light to suit the need, especially when bright sunshine glares the room. Direct rays of sunlight should never fall upon the book or other object which the individual is reading or studying.

(5) *Ribbed glass.* Factory ribbed glass, plane on inside, having twenty-one ribs to the inch, when set in the upper sash will, with a sky angle of sixty degrees, increase the room lighting fifty per cent. Ribs to be placed on the exterior and to be so set that the ribs run horizontally when the source of light is from above, or the ribs to run vertically if the light comes from the right or left.

(6) *Prism glass.* Prism glass, set in canopies over exterior of windows, may be used where the exposure is shut in by high obstructions on the outside.

(7) *Walls.* It is of course essential, in rooms where natural lighting is difficult to obtain, that the ceilings and upper portions of the walls be finished in white.

(8) *Diffusion.* All lighting should be so distributed and diffused that shadows and half-shadows are avoided, as these are particularly injurious to eyesight.

(9) *Piers.* Piers between windows should be as narrow as possible to avoid shadows.

(10) *Height.* Windows should extend as near ceiling as possible; thus the light strikes the ceiling, and is better diffused.

(11) *Sills.* Window-sills from three to four feet above floor produce the best lighting effect for occupants.

(12) *Glares.* Avoid windows on front walls and on side walls near the front of all rooms used for assembly purposes.

B. CIRCULATION (See also Section II, F.).

1. Entrances and Exits.

These to be in number proportionate to the size of the building, and placed near stairways. Separate entrances for the younger children, with as few steps as possible above grade. Make it easy for them to get in and out.

2. Corridors.

To be ample and so arranged that they give direct paths, with minimum changes in direction, to assembly-rooms, classrooms, and stairways for egress and exit. Each assembly-room, and as many classrooms as possible, to open into exit halls without entering other rooms.

3. Stairs.

Ample and secure as noted under Section II, F, 1.

C. GENERAL ARRANGEMENTS.

1. General Assembly.

Whenever desired may be held in the main auditorium of the church. Thus the student comes to understand that the school is actually a part of the church. This too removes the necessity of expending a considerable amount in building a large secondary and unnecessary auditorium.

2. Distribution.

Cradle Roll, Mothers' Room, Beginners, Primary, adult classes for women, and where possible for men, in the order named, to be given preference of location on the ground floor level, with as few steps as possible above sidewalk level. But one five-inch step is preferred. Other departments in second story.

3. Departmental Assembly-rooms.

(1) *Number*. Each department to have its own assembly-room, entirely separated by solid sound-proof partitions from every other department. No connection with any other departmental room except through a corridor.

(2) *Size*. A minimum of six square feet to be allowed per individual in assembly-room.

(3) *Light*. Provide glass area to floor area in the ratio of one-fifth on south side, and one-fourth on north side, area depending upon exposures, width, and other dimensions of room, as in public-school rooms. Light should come from left; cross light to be avoided.

(4) *Shape.* Room should not be more than one-third longer than it is wide.

4. Classrooms.

To be formed of solid partitions, with tight closing doors. Glass areas as in assembly-rooms.

D. DEPARTMENTS.

1. Mothers' Room.

Locate near to Cradle Roll room, but entirely separate from it.

2. Cradle Roll.

(1) *Location.* So locate on ground floor that the children will neither disturb nor be disturbed by meetings in the main auditorium. Near Mothers' room and the Beginners' and Primary departments.

(2) *Size.* Allow fifteen square feet of floor-space and two hundred cubic feet of air-space for each child.

3. Beginners. (Ages 4 and 5 years.)

(1) *Location.* Locate in vicinity of, but entirely separated by solid partitions from, Cradle Roll and Mothers' rooms.

(2) *Size.* Allow fifteen square feet of floor-space and two hundred cubic feet of air-space for each child.

(3) *Main room.* Provide an assembly-room approximately square for kindergarten circle work.

(4) *Secondary rooms.* Provide, with solid partitions, one or more classrooms for table-work, opening through a tightly closing door from the Beginners' assembly-room. This table-work room proportioned to the size of the school, but not larger than will accommodate a maximum of twenty-five children.

(5) *Visitors' space.* Provide a visitors' space, or alcove, adjacent to assembly-room entrance, where visitors will be inconspicuous and separated by a rail from the children.

4. Primary. (Ages 6, 7, and 8 years.)

(1) *Location.* Location desirable in the vicinity of, but entirely separated by solid partitions from, Beginners' department.

(2) *Size.* Allow six square feet per individual in assembly-room, and nine square feet in classrooms. Maximum number of pupils in classroom, ten.

(3) *Rooms.* Provide an assembly-room and, opening from it, or nearby, classrooms with solid partitions. The size of the school will indicate the number of classrooms to be provided.

(4) *Air-space.* Combined cubic contents of assembly-room and classrooms to provide two hundred cubic feet of air per pupil.

5. Juniors. (Ages 9, 10, and 11 years.)

(1) *Location.* Location may be on second floor.

(2) *Size.* Allow six square feet per individual in assembly-room, and nine square feet in classrooms. Maximum number of pupils in an individual classroom, twelve. Minimum width of classroom, eight feet.

(3) *Rooms.* Assembly-room should be attractive. Junior clubs and Junior young people's society will meet in this room. Classroom for each class to be formed of solid partitions and to have tightly closing doors. Rooms to be attractive in treatment. Each class will wish to "fix up" its own room, and will thus develop the sense of class ownership.

(4) *Air-space.* Combined cubic contents of assembly-room and classrooms to provide two hundred cubic feet of air per pupil.

6. Intermediate. (Ages 12, 13, and 14 years.)

(1) *Location.* Location may be on second floor.

(2) *Size.* Allow six square feet per individual in assembly-room, and nine square feet in classrooms. Maximum number of pupils in an individual classroom, fifteen. Minimum width of classroom, nine feet. If students' arm-chairs for writing are used instead of a table, the classroom minimum width should be eleven feet, but in this event the room may be of proportionately less depth to give the required nine square feet per individual.

(3) *Rooms.* Assembly-room should be treated with the same care as that for the Juniors and for the same reasons. Classrooms same as for Juniors.

(4) *Air-space.* Combined cubic contents of assembly-room and classrooms to provide two hundred cubic feet of air per individual.

7. Senior. (Ages 15, 16, and 17 years.)

(1) *Location.* Location may be on second floor.

(2) *Size.* Allow six square feet per individual in assembly-room, and nine square feet in classrooms. Maximum number of pupils in an individual classroom, eighteen. Minimum width of an individual classroom, eleven feet.

(3) *Rooms.* Assembly-room may be used also for Senior young people's meetings and for club purposes. Classrooms to be formed of solid partitions and tightly closing doors.

(4) *Air-space.* Combined cubic contents of assembly-room and classrooms to provide two hundred cubic feet of air per individual.

8. Young People. (Ages 18 to 24 years, inclusive.)

(1) *Location.* Location may be in second story.

(2) *Size.* Allow six square feet per individual in assembly-room, and nine square feet in classrooms. Maximum number of students in a classroom will vary with local conditions. Minimum width of a classroom, eleven feet.

(3) *Rooms.* Assembly-room may be used for club purposes and young people's society meetings. Classrooms of solid partitions and tightly closing doors. These will vary in size and arrangement with different schools, but usually a good-sized classroom for young women and a second similar classroom for young men will answer the requirements, provided there be a third room for teacher-training.

(4) *Air-space.* Combined cubic contents of assembly and classrooms to provide two hundred cubic feet of air per individual.

9. Adults. (Women.)

(1) *Location.* Location on first floor within easy reach of Cradle Roll and Beginners' rooms, with as few steps as possible above sidewalk level. Preferably facing on street and with abundant exposure to sun and air.

(2) *Size.* Allow seven square feet per individual in assembly-room, and eight square feet in classrooms.

(3) *Rooms.* The assembly-room will usually be the ladies' parlor, and will be used during the week for the usual women's day and evening meetings. In some churches, this room will be the weekly prayer-meeting room. Classrooms, where separate classes may meet, should be provided as local conditions require.

10. Adults. (Men.)

(1) *Location.* Location on first or second floor, or, where conditions so demand, on basement floor if it is not more than three feet below grade level. This is the only suitable use of a basement-room for meeting purposes.

(2) *Size.* Allow seven square feet per individual in assembly-room, and eight square feet in classrooms.

(3) *Rooms.* This assembly-room to be used for club purposes; and, where women's assembly-room is not used for weekly prayer-meetings, this room may be so used. Classrooms, same as Adults, Women.

11. Home Department.

Location on first floor, convenient to church entrance and auditorium. (See Section III, B, 7.)

E. SPECIAL ROOMS.

1. Officers.

(1) *Combination.* May be in connection with main church office or separately provided for but similarly equipped. (Section III, B, 5.) Locate near main floor entrance. Conference-room adjoining.

(2) *Accommodations.* Those to be provided for in the general office are: Director of religious education, or general superintendent; general secretary, with ample convenient storage cabinets for literature; general treasurer, with safe. Departmental superintendents and secretaries to have provisions in proportion to the size of the school.

(3) *Equipment.* Equip with usual office furniture, filing cabi-

nets, etc. Workroom for printing, mimeographing, etc., with shelves for stock equipment, should connect with these offices. Supply room conveniently located for immediate access from offices, for storage on ample shelving of all church and church school major supplies.

2. Teacher-Training.

(1) *Location.* Conveniently accessible from assembly-room of Senior and Young People's departments, for training of future teachers; also Junior and Intermediate departments for demonstration classes.

(2) *Size.* Large enough to hold teaching demonstration with classes called in from various departments of the school. To be used also for teachers' conferences. Allow nine square feet per individual.

3. Mission Study.

(1) *Location.* Conveniently near teacher-training room, museum, and geography room; or may be combined with these.

(2) *Size.* Allow nine square feet per individual.

4. Museum.

(1) *Location.* Convenient to mission-study room and all departments of church school, especially the Junior and older classes. May be combined with library and mission-study room.

(2) *Size.* A room about ten feet by fifteen feet will usually be of ample size. In some schools a smaller room will suffice, unless combined as above suggested.

(3) *Arrangement.* Built-in cabinets with hinged glazed doors. Cabinets to vary in size from those with shelving for small curios to those with hooks for hanging garments.

5. Library.

(1) *Location.* Convenient to church-school departments; to reading-room, probably on first floor; and to secondary entrance, for week-day uses.

(2) *Size.* Will vary according to size of church school and reading-room provisions.

(3) *Arrangement.* Cabinets and shelving, built in, to suit requirements and demands.

6. Map Storage.

(1) *Location.* Near library or in connection with same.

(2) *Size and arrangement.* Long and narrow, and so planned that long maps on rollers may be easily stored and removed. May be combined with geography and map-making room.

7. Geography and Map-Making Room.

Complete sets of maps of all biblical and missionary countries. Plasticine, a harmless and practically indestructible modeling material, requires no water, is always ready for use, is clean, may be obtained in colors, and may be painted with oil, water-colors, or dyes. This room may be combined with the map-storage room.

F. FACILITIES.

1. Toilets.

2. Closets.

(1) *Storage.* Ample and distributed as to location, so as to answer requirements.

(2) *Clothes.*

a. Location. If of solid walls like classrooms, they should be so placed that they may be entered from corridor before entering assembly-room. If of the built-in type, they may be located along the rear wall of assembly-room. Arrange to avoid confusion on entering and leaving.

b. Size. Of size in proportion to number to be accommodated.

c. Heat. Both heat and vent may be connected to these closets for the drying out of clothing in wet weather.

d. Provisions. Coat and hat hooks at heights varying with each department. Spaces for rubbers. Racks for umbrellas. Beginners, Primary, and Juniors should have provisions for labeling, with the name of the child, and space allotted to each individual. All other grades; sufficient for all usual requirements. If Adult and Young People's classrooms are so located as to be easily accessible to church narthex, the church coat-room may be used by these classes. (See Section III, B, 1.)

e. Light. Provide artificial light and natural light if possible.

(3) *Janitor.* One closet on each floor equipped with slop sink and with space sufficient for storage of brooms, mops, vacuum cleaners, dusters, etc.

3. Bicycle Storage.

Where bicycles are used, provide for them, with incline plane to and from street level. Provide bicycle racks.

4. Drinking-Fountains.

Drinking-fountains of sanitary type should be located conveniently in corridors, in sufficient numbers and of proper height for the students for whose use they are intended. A sufficient, absolutely pure water supply should be obtainable at all times. Children crave water much more than do adults.

5. Telephone Booths.

Where buildings are open all day, a public coin booth or booths located in corridor near office will be found a great convenience.

G. INTERIOR FINISH AND TRIM.

1. Walls and Ceilings.

(1) *Plaster.* All walls and partitions to be finished in hard wall plaster with smooth finish for decorating. Metal corner beads.

(2) *Cement.* Dado of cement finish, without grooves and ledges, tends to lessen damage and accumulation of dust.

(3) *Finish.* Ceilings plastered, smooth finish, left white.

(4) *Corridor.* Corridor wainscot either tile or glazed brick. Keene's cement not scored is a next best finish.

2. Floors.

(1) *Corridors.* Cement, overlaid with battleship linoleum, is less expensive than terrazzo, plastic composition, or tile, and makes for quietness. Hardwood, narrow boards, well-joined,

makes the next best floor. Sanitary coves at angle of wall and floor.

(2) *Assembly-rooms and classrooms.* Floors of hardwood, narrow boards. All floors with rooms under to be made sounproof.

3. Trim.

For sanitary reasons use a minimum of woodwork.

(1) *Casings.* Window and door casings should be of simple detail, with a minimum of moldings, to prevent breakage and collection of dust.

(2) *Moldings.* Picture molding to be run in each assembly-room at height above floor in scale with occupants; bearing in mind that all pictures are to be hung on a level with the eye of the pupil. Picture molding also in classrooms used as club rooms or for similar purposes. May be run also in corridors where hangings are desired.

(3) *Chair rail.* Chair rail without molding in each assembly-room and classroom at height to correspond with backs of chairs used.

(4) *Base.* Should be of simple detail, to prevent breakage and collection of dust.

4. Built-in Furniture.

(1) *Requirements.* There should be in each assembly-room at least one built-in bookcase or closet, with hinged glazed doors, provided with lock and keys. This to have shelves and drawers and to be large enough to store supplies, books, globe, and folded small maps when not in use, etc. Locate near teacher's desk.

(2) *Reasons.* Cabinets thus built in, of same material as the other trim, will fall in better with the decorative scheme of the room than when supplied independently.

5. Fireplace and Mantel-shelf.

Fireplace desirable in each department. It aids natural ventilation and assists in heating, besides adding an attractive homelike feature. Mantel shelf similarly also in scale with height of occupants.

6. Service Box.

A receptacle, four inches by twelve inches by sixteen inches, placed in partition between classroom and corridor, for papers, class-book, and collection envelope. Inside door with latch; corridor door with pass-key lock, for use of the secretary and treasurer. This arrangement will lessen the disturbances of the class session.

H. DECORATIONS.

In general, see Section III, C. (For a suggestive list of appropriate pictures, casts, vases, tiles, etc., see " School Sanitation and Decoration," by Severance Burrage and Henry Turner Bailey, published by D. C. Heath & Co. The following paragraphs on color and color schemes are taken in the main from this book.) Children being extremely sensitive to impressions, all rooms occupied by them should be so beautiful that they will reflect the simplicity, beauty, and sweetness of child life. Decorations should, not only be in scale with the occupants, but should be as beautiful in harmony as a favored home.

1. Colors.

Color of walls and ceilings in all assembly-rooms and classrooms should be carefully planned. The mason should leave a hard, smooth-finished surface for the decorator to enrich.

(1) *Source of light.* Consider the source of light. If the windows look toward the south, there will be direct sunlight; if toward the north, the room will have little or no sunshine; if the outlook is eastward or westward, the sun will shine into the room only morning or afternoon. The room must be cheerful, but not too brilliant in color.

(2) *Choice of scheme.* If north light, delicate tints of yellow and orange-yellow give an impression of warmth and light. Rooms having direct sunlight need the cooler and deeper tints of green, blue-green, and gray. As a rule, all the stronger tones of blue, and the intermediate hues to violet, are to be avoided; they are either unpleasantly cold or aggressive and insistent. Red and all its immediate relatives should be excluded, because such colors

are trying to the eye. Knowing, then, whether the scheme of the room should be warm or cool, that is, whether the yellows or greens are to furnish the prevailing colors, the precise hue and value of color for walls and for ceiling may be determined. In general, avoid light absorbing colors, such as reds of all tones. Bright yellows, too, are more fatiguing than neutral qualities of green or blue. A light greenish gray, as near white as possible, if stippled to prevent reflection, will give a soft, restful effect. Antwerp blue and raw sienna, with white base, will give the proper tint.

(3) *Key to problem.* The key to this problem is to be found in color of woodwork used in finish. All harmonies of color are, according to Ruskin's classification, harmonies of analogy or harmonies of contrast, or, to state it another way, harmonies of colors which vary but slightly in hue, like yellow and orange, or of colors which differ widely in hue, as do yellow and blue, or red and green. The color of the walls should therefore harmonize with the woodwork either by analogy or by contrast. Suppose the finish to be of oak. An examination of the polished wood will show that the general color of the surface is made up of irregular spots and lines of various colors, dull yellow, dull orange and brown, with many varieties of these. The colors which harmonize with these by analogy are tints of yellow and orange—in popular phrase, "cream," "buff," "the wood colors," "tan," and "light brown." Those which harmonize by contrast are the hues between blue and green—the "green-grays," "light olive," "tea," "light robin's egg," and similar colors.

(4) *Ceilings.* White or light tint to harmonize with walls.

(5) *Window shades.* Color of shades should be the same as the room walls, but somewhat darker in tone. Shades should be of dense material or rendered largely opaque by the application of a tinted water-color wash. Arrange shades as stated in Section IV, A, 4. A white shade on roller fastened at the bottom of the window will serve to temper the light on the level with and just above the students' eyes.

(6) *Pictures.* Pictures, busts, etc., in each department; also in classrooms as desired. Provision should be made for using

the influence of beautiful surroundings, pictures, busts, tiles, friezes, and the like, care being exercised to select good reproductions of masterpieces appropriate for a church school. Corridors, too, may be made very attractive by a careful use of these means.

(7) *Flowers.* Flowers, growing or cut, provided with proper setting, add greatly to room attractiveness.

(8) *Banners.* Banners for class or department when unobtrusively in view give children sense of room proprietorship.

I. FURNISHINGS, EQUIPMENT, AND SUPPLIES.

1. General.

No matter how excellent the grading may be, no matter how elaborate the curriculum put forth, no matter how up-to-date the text-books may be rated, if the school is lacking in accessories of equipment, much of its efficiency and "restfulness" will be lost. Finish of furniture should correspond with finish of room.

(1) *Chairs.* Of height to suit the size of the individual, as follows: Cradle Roll, eight and ten inches; Beginners, ten and twelve inches; Primary, twelve, fourteen, and sixteen inches; Junior, sixteen and eighteen inches; Intermediate and others, eighteen inches. Rubber tips on chair legs lessen noise on bare floors. Where floor is covered with rugs or carpet, smooth "metal" tips on chair legs make it easier to move chairs and lessen wear on floor covering. Student chairs, with table-arm for writing, in departments as noted.

(2) *Tables.* Of height to suit the size of the individual and number in each class.

(3) *Lap boards.* Lap boards, individual, may be substituted for tables, where desired.

(4) *Desks.* Desks of same material and finish as other equipment in same room. Desks for officers and superintendent of each department, of adequate size, with drawer space arranged for various sizes of papers. Desk-chairs, of same material and finish as desk.

(5) *Blackboards.* In all departmental assembly-rooms and classrooms.

a. If built in. If built in, place on front or side of room, or both as required. Avoid placing near windows. Keep height to minimum, as they absorb light. Use dull finished slate of dark green or black; or ground glass dull black.

b. If portable. If portable, to be of light weight on stable base for easy moving. May be pivoted for reversible use. Dull surface. Endless cloth blackboard on rollers, with yielding surface, is desirable.

c. Size. Size to suit use desired. Three feet high by five feet long gives a good maximum dimension.

d. Height. Height of chalk rail as follows: (a) Beginners, ages four and five, twenty-four inches; (b) Primary, ages six, seven, and eight, twenty-six inches; (c) Junior, ages nine, ten, eleven, twenty-eight inches; (d) Intermediate, ages twelve, thirteen, fourteen, thirty inches; (e) Senior, ages fifteen, sixteen, seventeen, thirty-two inches; (f) Young People and Adults, ages eighteen and over, thirty-six inches.

e. Curtains. Provide light-colored curtains, to match wall decoration, for covering boards when not in use on dark days.

f. Chalk. Chalk, white and colored, and erasers.

g. Trough. Chalk and eraser trough, at bottom of board, two and one-half inches in width. Trough should have an open woven wire cover, with one-quarter-inch mesh, set with hinges.

(6) *Bulletin-boards.* Provide at front inside of each assembly-room, a built-in bulletin-board of cork or soft pine, omitting, if necessary, a section of blackboard for this purpose.

(7) *Pianos.* One "upright" in each department or assembly-room.

(8) *Cabinets.* (See Section IV, G. 4.)

(9) *Lighting fixtures.* To be of design, material, and finish to conform and harmonize with the desired artistic effect and color scheme.

(10) *Carpets or rugs.* To be of design, material, and finish to conform and harmonize with the desired artistic effect and color scheme.

(11) *Curtains.* To be of design, material, and finish to conform and harmonize with the desired artistic effect and color scheme.

(12) *Thermometers.* A thermometer in each assembly-room and one on outside of building, at office, protected from wind and sun.

(13) *Platforms.* Unsanitary, and not needed except in rooms seating more than one hundred.

(14) *Industrial equipment.* To be under the care of a caretaker for use in all departments. Maps, charts, stereopticon globes, stereoscopes, and biblical subject stereographs, etc., as hereinafter listed under each department.

2. Departmental.

(1) *Mothers' room.* Furnishings additional: easy chairs, lounge. Supplies: mothers' magazines, books for circulation among mothers.

(2) *Cradle Roll.* Furnishings additional: cradles, rocking-chairs, lounge, children's rocking-chairs, plenty of playthings, and pictures mounted on linen. Supplies: the Cradle Roll, record-cards, or record-book, membership certificates, promotion certificates, birthday cards, departmental stationery.

(3) *Beginners.*

a. Furnishings additional. Sand-table, about four by six feet in size hinged to close against wall when not in use and to fit in with wall panelings; sand storage below so arranged that sand will run into storage automatically as table is closed; modeling-table, modeling-clay, pulp, or plasticine; kindergarten tables, of such size and weight that two children can handle them with ease; scrap-books; song-rolls, each on a separate roller; pictures hung so low children can touch; models and objects, such as house, church, dolls, camels, tent, rod, and staff, and water-jar.

b. Supplies for handwork. White paper, pencils, crayolas, colored paper, small pictures to be mounted, paste, scissors, sticks, blocks, collection of seeds, leaves, nuts, wheat, corn, straw, twigs, flowers, and birds' nests.

c. Superintendent's supplies. Record cards or record book, membership certificates, promotion certificates, birthday cards, departmental stationery. It might be wise for the superintendent to have charge of a special library for the use of the workers in this department.

(4) *Primary.*

a. Furnishings additional. Sand-table, arranged as for Beginginners; modeling-table; modeling-clay, pulp, or plasticine; models and illustrative objects; Scripture rolls; and song-rolls, each on a separate roller.

b. Supplies for handwork. Scissors, paper for cutting, pencils, paper pads, paints, crayons, paste.

c. Superintendent's supplies. Bibles, to be presented to the individual child, with his name, etc., printed or written therein; record-cards or record-books; membership certificates; promotion certificates; birthday cards; departmental stationery.

(5) *Junior.*

a. Furnishings additional. Sand-table, arranged as for Beginners; sand-trays; sand; modeling-table; modeling-clay, pulp, or plasticine; models; illustrative objects; memory-drill charts; variety of selected printed mottoes from which each class may choose its own. If a manual-training equipment is provided, pupils will have their interest in the church school increased by competition in making window-boxes for flowers and other furnishings needed by the department. Girls can make curtains and other useful departmental furnishings.

b. Supplies for pupils. Extra Bibles, hymn-books, pencils, paper pads, note-books, and circulating library of selected books.

c. Superintendent's supplies. Bibles to be presented to the individual pupil, properly inscribed; record cards or record books; promotion certificates; birthday cards; departmental stationery.

(6) *Intermediate.*

a. Furnishings additional and special. Table arm-chairs in classrooms for pupils, charts, stereoscopes, stereographs, class mottoes; athletic supplies; manual training and domestic science may be used to center the interest of the pupil upon the department as noted under Junior Department.

b. Supplies for students. Extra Bibles, hymn-books, pencils, paper pads, note-books, circulating library, dictionary, atlas.

c. Superintendent's supplies. Bibles, to be presented to the individual pupil, properly inscribed; record cards or record books; promotion certificates.

(7) *Senior.*

a. Furnishings additional and special. Table arm-chairs in classrooms for students, charts, club-rooms, athletic equipment.

b. Supplies for students. Extra Bibles, hymn-books, pencils, paper pads, note-books, circulating library or library lists, dictionary, concordance, atlas.

c. Superintendent's supplies. Record cards or record books, departmental stationery.

(8) *Young People.*

a. Furnishings additional and special. Table arm-chairs, in classrooms for students. From this department are drawn students to make up the teacher-training and mission study classes. (See Special Furnishings and Equipment and Supplies, for each.)

b. Supplies for students. Bibles, hymn-books.

c. Superintendents supplies. Record cards or record books, departmental stationery.

(9) *Adults.*

a. Furnishings additional and special. Table arm-chairs in classrooms where desired. Record cards or record books, departmental stationery. Bibles and hymn-books.

(10) *Home department.* Large print Bibles, easy chairs, rocking-chairs, lounges, record cards or record books, departmental stationery.

(11) *Teacher-training.* Bibles, special reference library, blackboards, maps, charts, pencil, and pads. Record cards or record books, diplomas.

(12) *Mission study.* Headquarters for missionary committees. Bibles, missionary maps, reference library, charts, large globe, missionary magazines, blackboards, charts, curios, pencils and pads, diplomas.

(13) *Toilets.* Toilet paper and holders, mirror, soap, and towels.

SECTION V

SOCIAL AND COMMUNITY ROOMS

A. LOCATION.

Should be of easy and immediate access, and visible from street. Rooms should be so related to each other as to permit of easy circulation.

B. GENERAL PROVISIONS.

In buildings carefully planned, many of the rooms will be so arranged that they may be used at different times during the week for several purposes. Church schoolrooms may be used also for week-day kindergarten, nursery, daily vacation Bible school, Americanization classes, sewing classes, domestic science, music lessons, manual training, exhibition purposes, reading-room adjoining library, Boys' Brigade drill, office. Assembly-rooms may be used for club purposes for each sex, all ages. Recreation-rooms may be used for church suppers, moving pictures, dramatic and other entertainments.

C. ROOMS FOR GENERAL USES.

1. Recreation- and Dining-room.

(1) *Size.* Large enough to seat at table at least fifty per cent of the people served by the community church. Allow ten square feet per person to be served.

(2) *Equipment.* Material for take-down tables, temporary platform, piano, folding-chairs.

2. Kitchen.

(1) *Location.* Convenient to the recreation and dining-room. Size should be one-eighth to one-fourth of the area of the larger room. Separate outside service entrance.

(2) *Equipment.* A range, and, where possible, gas plates. Large kettles and other necessary utensils for cooking for large groups. Sinks, hot and cold water, dish-washing facilities and draining racks, etc. Table for scraping dirty dishes with garbage receptacle underneath. Refrigerator equipment, vegetable storage, electric potato-paring machines, electric cream freezers, and electric dishwashers are desirable equipment.

3. Serving-room or Rooms.

(1) *Location.* Opening from kitchen and between kitchen and dining-room.

(2) *Equipment.* Ample in size and provided for quick service, with broad, long serving-counters, across which the waiters are served. (Waiters should not enter kitchen.) Two-way swing doors between serving-room and dining-room, with kick-plates and glass panel. Glazed door protected shelving, kept low, of size required to contain dishes necessary for maximum number to be served.

4. Closet for Silver and Linen Storage.

D. ROOMS FOR SOCIAL SERVICE.

1. Women's Social Room and Mothers' Room.

Equipped with tables, chairs, couches, and furnished in a way to make it an attractive meeting-place for women's clubs and organizations. Should adjoin the day-nursery room. Should have large enough closet or anteroom to enclose sewing-machines and other equipment which might be used by different organizations using the room. It is important to keep this room in good order.

2. Girls' Club-rooms.

Location should be accessible and visible from street, with separate outside entrance. Convenient to library. Equipment should consist of chairs, tables, newspapers, and magazine racks, trophy cases and bulletin-board. Pictures and pennants to make room an attractive meeting and gathering place for girls. Wardrobes or closets to be used by separate organizations for keeping costumes, and other equipment. Kitchenette should be conveniently near.

3. Men's Club-room.

Location should be accessible and visible from the street. Direct entrance from outside of building. Convenient to library, and not too far removed from kitchen. Equipment should consist of comfortable chairs, tables, newspapers and magazine racks, chess tables, pictures, rugs, etc., to make the room an attractive lounging and rest-room for men.

4. Boys' Club-rooms.

Equipped similarly to girls' club-room.

5. Nurses' and Rest-room.

Location should be convenient to school classrooms. Equipped with adequate first-aid outfit, chairs, reclining couch, washstand with hot and cold water, and toilet.

6. Day-nursery.

Located near mothers' room. Equipped with cribs, kindergarten chairs and tables, toys, etc.

7. Civic-center Room.

Used as a room for evening classes in citizenship, for social gatherings and special talks, and for committees and other bodies engaged in community work. Equipped with text-books, writing materials, lantern and reflectoscope, signs and placards, and other materials used in civic instruction. Pictures with American ideals should predominate.

8. Social Workers' Office.

This room should be equipped with desk, table, and chairs for conferences and small group meetings. Filing cases for card record of visits, cases, and follow-up work. A small reference library of special books to be referred to in personal consultations is desirable.

9. Library and Reading-room.

Location near main entrance or with separate outside entrance.

(1) *Library.* Books and periodicals, reference books, encyclopedias, church histories, and other church references, adjustable book-shelves, librarian's desk, card-catalogue, typewriter, repair and marking equipment, charging system and records.

(2) *Reading-room.* Tables or desks preferably with seclusion partitions, individual reading-lights, comfortable chairs, racks for wraps and umbrellas, holders for newspapers and magazines.

10. Kitchenettes.

Of locations and sizes in accordance with requirements of clubs or other organizations using rooms. The equipment should consist of a two-burner gas plate, sink with hot and cold water, stool, cabinet for dishes, cutlery, dishes, cooking utensils, and anything else required.

E. DRAMATIC PRODUCTIONS.

1. Stage.

(1) *Size.*

a. Height. If seats of audience hall are placed on an incline plane, minimum two and one-half feet; if flat, at least three and one-half feet.

b. Width. Width of stage should be double the width of the proscenium opening. If opening is thirty feet wide, there should be about fifteen feet on either side of it in order to have adequate room for assembling participants, moving scenery, lighting purposes, etc.

c. Depth. Should approximate width of proscenium opening.

d. Back. Back of stage should not be the outside wall of building, but should be a wooden partition harmonizing with general decorative scheme with passageway at least behind it. Sliding-doors opening into room on stage level which, when partitions are open, can be used as an extension or inner room.

e. Risers. A set of risers for accommodating a chorus or for special church school exercises. A set of movable risers is desirable.

(2) *Character.* Level (not an inclined plane). Soft-wood floor. Elimination of apron entirely or reduced to a minimum.

(3) *Proscenium arch.* Minimum opening of thirty feet, with a minimum height twenty feet. Forty-foot opening requires at least twenty-five feet. There should be sufficient space above the opening for the raising of drops without rolling or tripping them. Space above the stage should be used for this purpose alone. Portable, adjustable pilasters, and adjustable piping for curtain hangings are desirable.

(4) *Scenery.* Should consist of curtain, plyon sets, sky cyclorama screens, box sets, wings, and drops. Most desirable scenery combination includes curtain, plyons, and sky cyclorama. Scenery with a minimum of constructed parts and a maximum of lighting effects, and modern equipment lending itself to the greatest amount of flexibility, is most desirable.

(5) *Curtain.* A draw curtain is preferable. The curtain should be fire-proofed. It is desirable to have a regular asbestos fire curtain in addition.

(6) *Combination steps, extension stage, ramps,* etc. There should be no steps leading to the stage from the sides or back, but sectional steps leading from the audience-room proper to the stage. An extension stage is frequently found desirable as well as inclines and ramps that can connect stage with audience-room proper.

(7) *Portable small stage.* Provision should be made wherever possible for a portable stage for the opposite end of the hall from the stage proper.

(8) *Dressing-rooms.* Good-sized dressing-rooms for men and women, located near the stage. These rooms should be equipped with tables, mirrors, and ample clothes-hooks or racks.

(9) *Buzzer system.* Electrical buzzer connections with orchestra, dressing-rooms, and lights operator at rear of room.

(10) *Special orchestra and chorus space.* Movable sectional floor to cover depressed orchestra pit, with risers on either side extending above floor level.

2. Musical Equipment.

Piano. Pipe-organ. Either instrument may take place of orchestra. Music stands, with light equipments, so shaded that all light will be shut off line of vision of audience.

3. Visualization equipment. (See Section IX.)

4. Auxiliaries to Assembly-room.

Storage room for risers and seats easily accessible to audience-room. Costume-room, property-room. Rooms with wardrobes, to keep costumes and properties safe and in good condition, are essential. Bulletin-board. One or more illuminated bulletin-boards should be installed outside of buildings. Box office for special benefits should be provided.

5. Workshop for Stage Properties.

Where additions to costumes and properties are planned, the equipment should include work-bench for wood-workers and electricians; drafting table; sewing machine; dyeing equipment; cutting equipment; pressing equipment; closets, drawers, chests; tool outfits; stenciling equipment; and painting equipment. This shop should provide at least six hundred square feet for the use of church and community workers in making scenery, costumes, properties, etc. It should be readily accessible to the stage.

SECTION VI

RECREATION PROVISIONS

A. GYMNASIUM.

1. Location.

On ground floor, accessible from playground by outside door. Separate as far as possible from all parts of the building that are to be used for conflicting purposes. If gymnasium is over swimming-pool or bowling alleys, neither will interfere with the other.

2. Size.

Minimum size for basket-ball, forty feet by sixty feet; larger sizes, in the proportion of five to eight. Minimum ceiling height, if hanging apparatus is to be used nineteen feet, figured to under side of lowest girders; otherwise sixteen feet. Care should be taken to get seven feet six inches clear head-room in track, free of all pipes, girders, etc. If running-track or spectators' gallery is used, it should be not less than five feet wide and placed eleven to twelve feet above floor. If gallery is omitted, spectators may be accommodated in space recessed in side or end walls or on portable bleachers on the floor, provided sufficient floor-space has been allowed.

3. Construction.

Avoid plaster running down to floor. Salt glazed brick of light color make very satisfactory wainscoting, and light-colored brick may be used above. Windows and light should be protected by heavy mesh-wire guards. Windows may be placed both above and below running-track or gallery. Skylight is not essential. Avoid getting absolutely rigid floor. Maple floor or rough floor on sleepers is good construction. Use angle iron at intersection of floor and walls to protect wall from heavy apparatus. Avoid circular stairs if possible on account of danger of accidents. Keep space of at least forty by sixty feet clear of wall projections, pipes, radiators, and columns, for games. Any column, etc., bordering on such space should be padded to height of six feet. If room is more than forty feet wide, and wall apparatus is to be used, a wood strip should be run around room five feet six inches from floor for fastening apparatus. To lessen danger of accident to players, store dumb-bells, Indian clubs and wands in chests or lockers in apparatus-room rather than on walls of gymnasium. If rooms used by others are located above or below, care should be taken to thoroughly sound-proof the dividing floor. All walls should be made as sound-proof as possible.

4. Equipment.

Provision for basket-ball, volley-ball, handball, indoor baseball, and other group activities. Pulley weights, floor-mats, horse, horizontal and parallel bars, climbing-ropes and ladders, jumping-board and standards, flying-rings, dumb-bells, Indian clubs, wands, boxing gloves, quoits, etc.

5. Athletic Director's Office.

Fully equipped, including first-aid supplies, and located so as to control all athletic rooms.

6. Apparatus Room.

If possible provide apparatus-room opening off gymnasium, for keeping dumb-bells, Indian clubs, and wands in chests or lockers and for storage of mats and heavy apparatus when floor is used for large classes and audiences. Opening into such storage space should be at least six feet wide.

B. LOCKER-ROOMS.

Adjacent to the gymnasium, three separate spaces, i. e., for men, boys, and females. Steel lockers, ventilated. Minimum of large dressing-lockers with maximum of small storage lockers. Ample forced ventilation for these spaces.

C. SHOWERS.

1. Necessity.

Shower-baths are a practical necessity, as violent physical exercise not followed by a bath and rubdown is neither sanitary nor safe, especially in cold weather.

2. Construction.

Open shower-room without stall and partitions is used for men and boys, but separate showers with dressing-rooms combined are essential for women and girls. Provide drain gutter at back wall full length of shower-room instead of individual drains under each shower.

3. Water.

Hot and cold water should be obtainable at all times at each shower. This last standard requires careful consideration when plumbing is installed. Hot water storage capacity should be provided sufficient to supply all showers for one-half hour. Heater capacity should be carefully studied. Separate hot and cold water valves are quite satisfactory, instead of expensive mixing valves, provided tempering valve is provided to cool all hot water supplied to shower heads to one hundred and fifteen degrees.

4. Toilets.

Toilet facilities should be provided adjacent to showers and locker-rooms.

D. SWIMMING-POOL.

1. Location.

Not an essential feature of a recreational plant, but, if included, should be easily accessible from locker-rooms, with separate entrance from each.

2. Size.

Standard swimming-pool should be twenty by sixty or larger. Smaller plunges may be installed, but are not serviceable for competitions. Standard pool has three slopes on bottom providing space twenty feet square for instruction with water-depth varying from two feet six inches to four feet; greatest depth, not less than eight feet six inches, should be fifteen feet from spring-board end of pool, and bottom may be then sloped up to six feet depth under spring-board end, thus saving water. Bottom and sides should be tiled.

3. Maintenance.

Provision for sanitary maintenance, through frequent and adequate cleansing of the pool, through a continuous and filtered water supply, and through the sterilization and laundering of swimming-suits and towels should be included.

4. Supervision.

It is essential that there be constant supervision of pool while in use. This requires a swimming attendant's office with wide window overlooking the pool.

5. Construction.

The construction of a pool is such a highly specialized problem that the advice of a competent swimming-pool engineer will be wise policy. A trolley and swimming-belt are useful apparatus for instruction to beginners.

E. HANDBALL COURTS.

Four wall courts should not be less than thirty feet deep, fifteen wide and fourteen high. Outdoor courts can often be made against blank walls of the building; and, if a concrete floor is provided, can be used all year. Where separate provision is not made for handball, one or more wall spaces in the gymnasium should be left clear of apparatus for use with handball.

F. GAME AND AMUSEMENT ROOMS.

Equipped with stands for checkers, shuffleboard, chess, and other concentration games. Where separate room is not available for these games, they should be distributed through the several club-rooms. Where billiard or pool tables are installed, equipment for cues and their care should be provided. There should be space enough for chairs at sides or ends of rooms. Minimum size for two tables is twenty by twenty-five, which should be free of all columns, etc. Such a room is preferably located near physical director's office or some other room where an officer is in constant attendance. Efficient upkeep of all equipment is essential.

G. BOWLING ALLEY.

Most economically built as a pair of alleys. Should be soundproof. Bank of seats at end for spectators and for contestants in tournaments. Two alleys require a space of eleven feet six inches by eighty-three feet. Each additional alley will require an additional five feet nine inches in width. Gallery at rear will be additional to the above length.

H. SUPERVISION AND CONTROL.

1. Essential.

Efficiency and economy demand centralized supervision and control. Billiard tables may be in lobby, and the game, reading, and club-rooms within view of general office.

2. Entrance.

Entrance to gymnasium and swimming-pool, if only through office controlling locker-rooms, will give essential control. This office handles care of towels, sale of gymnasium supplies, etc., and may, in small plants, be operated in connection with the athletic director's office.

I. FURNISHINGS.

Consider attractiveness, but also simplicity, durability, and usefulness. This applies to rooms for special purposes, as well as to the physical department.

SECTION VII

MECHANICAL EQUIPMENT

Heating, ventilation, plumbing, artificial lighting system, fire protection, and other mechanical service.

This is well covered in "Standards for City Church Plants," issued by the Interchurch World Movement. The reader is referred to that book. The same data is also published by the Interchurch World Movement in "The Malden Survey."

SECTION VIII

ORGAN

A. LOCATION.

1. Choir.

Proper placing with relation to the choir.

2. Pulpit.

Usually preferred at pulpit end of auditorium.

3. Organ.

Ample speaking-room for organ.

4. Cautions.

(1) *Baptistry.* Avoid placing immediately over or too near a baptistry, as the evaporation is liable to affect adversely the delicate well-seasoned mechanism.

(2) *Floor.* Avoid placing on a floor not ventilated beneath.

(3) *Furnace.* Avoid placing on a floor directly over a furnace or heating apparatus, for the mechanism of the organ will shrink and cause leakages, besides deranging seriously the action-work.

B. SPACE.

1. Form.

(1) *Rectangular.* Rectangular in plan, as all interior parts of an organ are built on rectangular lines. Curved, triangular, or octagonal spaces make organ placing difficult or expensive if not impossible.

(2) *Walls.* All walls, if possible, but certainly the rear wall, to be vertical the full height of required space.

(3) *Ceiling.* Ceiling flat, not over-arched or curved at top.

2. Size.

As stated for each size of organ in specifications below. There is little danger of providing too much space.

3. Arrangement.

(1) *Access.* Provide a door of access on each side of each organ chamber.

(2) *Drafts.* No door leading to an organ chamber should be exposed to drafts of damp air from a cellar or other source.

(3) *Ventilation.* Make possible the circulating of dry air through, or the ventilation of, the interior of the organ, when about to be used, so that the air within the case shall be of the same temperature as in the auditorium. Otherwise in very cold weather, unless the room is kept constantly heated, the organ will seldom be in tune at the beginning of the morning service.

C. ACCESSIBILITY.

Provide easy access by means of generous, square turn stairways, or wide corridors or passageways.

D. SUPPORTS.

To be ample, rigid, and well braced. Must not spring with weight of organ. Lack of firmness will tend to disarrange the parts and impair the working of the organ. Foundation bearings to be guaranteed against settlement.

E. CONSOLE.

1. Location.

(1) *Front.* Normal position at center of front case of organ.

(2) *Side.* When space between pulpit and organ is meager, console may be placed at one side of the center or at the end of the organ nearest the choir.

(3) *Forward.* If desired may be brought forward so that organist may face the choir and more conveniently direct the singers; also to hold a strategic position for correlation with minister.

(4) *Depression.* To accomplish "3" may be placed in a depressed recessed position in front or to one side of pulpit platform.

2. Size.

If at front or side, it occupies, with pedals and bench, a space about four feet square. If detached from organ case, and brought forward or depressed, whether facing the organ or reversed, it occupies with pedals and bench a space about five feet by five feet by five feet.

3. Extension Connections.

When console is located otherwise than immediately in contact with organ, it is not advisable with pneumatic action to place the console more than twenty feet from the organ. If electro-pneumatic system is employed, the console may be placed in any desired location.

F. BLOWER-ROOM.

1. Location.

Should be in clean, dry basement far enough removed from auditorium so that motor cannot be heard.

2. Size.

Room should be about eight feet by ten feet by seven feet high.

3. Wind Supply.

Wind supply should be same temperature and dryness as the audience-room.

4. Wind Trunks.

Wind trunks from blower-room to organ chamber or chambers should be of galvanized No. 26 gauge, soldered joints, and be of size desired by organ-builder to meet his requirements. These wind trunks should be installed in new buildings during construction, so as to avoid cutting floors, partitions, etc., later, for installation of organ.

G. ORGAN CASES.

1. Design.

The design of the organ case may be furnished either by the architect or by the organ-maker. If furnished by the architect, however, the diameters of the front display pipes must be dictated by the maker according to the speaking stop from which they are selected, and the maker must include in his estimate the cost of building according to the plan. If the maker furnishes the design, it should be submitted to the architect for his approval before being accepted.

2. Spacing.

It is always desirable to allow liberal spacing between the front pipes in order that the tone shall not be confined.

H. BUYING.

1. Ornamentation.

In purchasing an organ, it is well to keep in mind that one is buying permanent tone quality and not pipes, pedals, and ornamentation.

2. Capacity.

Far better an organ of medium capacity and best quality than a large organ of a cheap grade. Do not purchase an organ larger than is necessary. In large church organs many costly stops remain unused for years because the service does not call for their use.

3. Equipment.

The mechanical equipment, number of pipes, pedals, etc., are but means to an end. An organ may be brilliant at the expense of sweetness and mellowness of tone.

4. Cost.

Cost of organ for church-buildings costing twenty thousand dollars and over will run approximately ten per cent of the cost of church-building.

I. MAKER.

1. Qualifications.

Responsibility, skill, experience, and reputation of the maker count most in organ buying. You are buying an intangible something, namely, permanent quality.

2. Guarantee.

A guarantee is only as good as the company behind it, no matter how strongly the guarantee may be worded.

3. Selection.

Select your organ-maker as you do your architect. You must have such confidence in the maker that you will trust him to fulfil every detail of the specifications in spirit as well as in letter.

J. ORGAN EXTENSIONS.

1. In Gallery.

Second organ in gallery at opposite end of church from main organ—antiphonal.

2. In Ceiling.

Third organ in ceiling—echo organ.

3. Choir-room.

Fourth organ in choir-room—set of pipes for processional and recessional.

K. SPECIFICATIONS.

1. Items.

Specifications for size, manuals, stops, organ divisions, and mechanical features should follow details as are desirable for auditoriums of varying sizes.

2. Space Provisions.

Modern pipe organs, with pedals and electric blower of ample capacity, require space provisions for auditoriums of various floor seating capacities approximately as follows:

For an auditorium seating 300 or less, a two-manual organ requires a space eight feet deep, by twelve feet wide, by fifteen feet high.

For an auditorium seating from 300 to 600, a two-manual organ requires a space ten feet deep, by seventeen feet wide, by fifteen feet high.

For an auditorium seating from 300 to 600, a three-manual organ requires a space fourteen feet deep, by seventeen feet wide, by seventeen feet high; or, if the organ is divided, each of the two chambers requires a space eight feet deep, by twelve feet wide, by fifteen feet high.

For an auditorium seating from 600 to 1,000, a two-manual organ requires a space twelve feet deep, by twenty feet wide, by seventeen feet high; or, if the organ is divided, each of the two chambers requires a space ten feet deep, by twelve feet wide, by fifteen feet high.

For an auditorium seating from 600 to 1,000, a three-manual organ requires a space fourteen feet deep, by twenty feet wide, by seventeen feet high; or, if the organ is divided, each of the two chambers requires a space ten feet deep, by fourteen feet wide, by seventeen feet high.

L. GRAND PIANO.

Grand piano, in tune with organ, and placed in choir gallery or on front floor of the church auditorium.

SECTION IX

VISUALIZATION EQUIPMENT

Floor level of a room in which moving pictures are shown should not be more than one step above the exit sidewalk, and all exits should be without turns.

A. STEREOPTICON EQUIPMENT.

1. Operation.

Operated from gallery or curtain at front.

2. Machine.

Any standard make.

3. Illuminants.

For pictures up to ten feet in dark room, four hundred Mazda lamp. For pictures up to thirteen feet in dark room, one thousand Mazda lamp. For pictures over thirteen feet in dark room, arc lamp for direct current and Monoplane lamp for alternating current. For daytime projection where a certain amount of diffused light is unavoidable decrease diameter of picture by twenty-five per cent.

4. Lens.

Should be half-size objective lens of standard make.

5. Equipment.

Will vary according to the size of the room.

B. MOVING-PICTURE EQUIPMENT.

1. Booth.

Fire-proof according to the requirements of the town or city. It should be completely lined with asbestos or steel. Provide an opening or separate flue from booth direct to outside air of at least fifty square inches in section.

2. Motion-picture Projectors.

(1) *Portable machines.* Have not as yet been perfected, and are consequently not standard equipment.

(2) *Standard machines.* All these machines require the use of a fire-proof both. Two of the first-class machines are the Simplex Motion-picture Projector with incandescent lamps and the Powers Cameragraph with incandescent lamps.

C. SCREENS.

1. Walls.

Wall on which screen can be painted.

2. Cloth.

Opaque, white screen of cloth.

3. Aluminum.

Aluminum screen to be used only when colored pictures are not shown and where angle of view is not over sixty degrees. Preferable for motion pictures in long narrow audience-room.

4. Half-tone.

Half-tone screen is probably as good for both stereopticon and motion picture use as any single screen.

5. Rolled.

Curtain to be rolled from floor up and be entirely invisible when not in actual use.

D. DARKENING.

Provision for darkening the windows of all rooms in which visualization equipment is to be used.

SECTION X

GROUNDS

To omit the proper laying out of walks, drives, and the plantings of trees, shrubs, and vines, and also the development of the lawn, is all too frequent, but it is a great oversight to so let pass the one thing which adds more than any other to the general appearance of the building. This is equally true of the rural and the city site. Employ a landscape architect or gardener.

REFERENCES

"Standards for City Church Plants," Interchurch World Movement.

"School Sanitation and Decoration," Severance Burrage, S. B., and Henry Turner Bailey.

Article on "Sunday School Architecture," published in "The Sunday School Journal," March, 1920.

"Church Building. Monographs Numbers One and Two," by the Bureau of Architecture of the Methodist Episcopal Church.

"Recreation and the Church," Herbert Wright Gates.

"The Coming School of the Church," William E. Chalmers.

"The Sunday School of Today," William Walter Smith.

"The New Country Church Building," Edmund DeS. Brunner.

"Housing the Sunday School," Marion Lawrance.

"The School House," Joseph A. Moore.

"School Hygiene," Edward R. Shaw.

"Sunday School Experience," Henry Edward Tralle.

"The Sunday School Building and Its Equipment," Herbert Francis Evans.

"Church and Sunday School Buildings," P. E. Burroughs.

1.25
A

3 2044 038 387 569

JUN 28 1969

~~JUL 2 3 1969~~